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Bees and Honey.

It is possible that the very mild weather prevailing this year has kept the bees active enough to use many more stores than they would have done if it had been cooler, yet they cannot have gathered much honey, as there has been frost enough to kill the fall flowers; in fact, the golden rod was killed a little earlier than usual. It would be well to make a careful examination before cold weather makes it too late, and if there is any shortage of supplies remedy it at once by giving them any unsealed or unfinished comb that was left when the honey was taken last fall, and if there are not any give good syrup made with one part of sugar and two of water boiled down to a thick syrup, or equal parts of cheap, thin Southern honey and sugar, not boiled but made almost as thick as candy, is better. Place a pan of this inside the hive above the frame, laying small sticks across the syrup to prevent the bees drowning, and they will store it away very quickly. In an old book we find the following story from a farmer in New England: He had three swarms of bees one season, and in November two of them died, leaving no honey in the hive. The other colony was alive, but with little honey left. He bought twenty-three pounds of Southern honey and fed it a little at a time, without adding sugar. In three days they had disposed of the twenty-three pounds. They wintered well, and from June 15 to June 30 they sent out three swarms. During the summer and autumn he took from the old swarm two boxes of honey weighing eighteen pounds. Remember they had been weakened by excessive swarming, and this was before the days of foundation sheets, and before many extracted honey so as to have empty combs to put in the hive for the new swarm. From the first swarm he took six boxes of honey, weighing fifty-eight pounds. The four hives were large, and each contained about fifty pounds of honey, making a total of 276 pounds of honey and comb. With our modern hives and methods there is little doubt but that he would have had a larger yield. But it was a most disastrous season, and one neighbor lost twenty-two swarms. In all forty-four swarms died in that neighborhood, all of which he thought might have been saved by feeding.

Every beekeeper should take advantage of the winter to provide hives enough for the possible increase of his colonies, and with foundation sheets enough for them, and for the sections in the supers of the old hives, and with all supers and sections that may be needed. There is safety in being well supplied, and danger in being caught without hives, frames and other extras that may be needed. In most places these supplies can be bought more cheaply packed down in flats than they can be sawed from the boards, with the advantage of having all of one pattern so that parts can be interchanged with one another. There should be two empty hives, and at least as many supers for each of the old colonies, for, although they may be more than the increase, it is better to have one empty hive unused than to lose a swarm by the lack of a hive, and while many try to prevent second swarms they often fail to do so, and while two late swarms are often united to make a strong colony, it cannot well be done until each has established itself, when the queen of one can be destroyed, after which they can be better united.

While we do not believe in the necessity of wintering bees in the cellar in this climate, we believe in giving them a double hive, or an outer case over the hive with an air space between them of at least two inches, which, in a very cold locality, may be filled with straw cushions. This outer case should be water tight, that the cushions may not be wet. A shelter or wind break on the north, northeast and northwest sides is a desirable thing when the colonies are dormant, but this is of more value when the bees get up to take a cleansing flight, as they are apt to do in December or January. They often take two or three in the winter, if the weather allows.

Care of the honey in winter is not less important than caring for the bees. The best place for it is, as nearly all agree, a cool, damp, and we think we may say, a place that has not furnace heat in it. It absorbs dampness very quickly, and causes it to grow thin, ferment and spoil. It also absorbs bad odors from vegetables or other contents of the cellar. Give it a dry and warm room where it will not freeze in the coldest weather. Do not store extracted honey in galvanized cans or pails. It will gradually eat away the zinc, and if it does get enough to render it poisonous, it is a pity but little to make it unwholesome. Contrary to a general opinion, the

honey that granulates in winter is pretty sure not to be adulterated, as honey which has glucose in it does not granulate. But the granulation can be very nearly prevented if the sunlight is not allowed to fall on it. Many grocers set it in the window, where it gets full blaze of sunlight, and then blame the beekeepers for the sugaring of the honey. If it is stored in wooden casks or barrels, they should be clean, and the wood such as will not impart any resinous or other unpleasant flavor to the honey. The honey should be allowed to ripen in the comb before it is extracted, and if it is not all well ripened, do not offer it for sale until it is.

When the bees take a flight in winter they look for water about the first thing. A sponge saturated with water slightly sweetened and salted and placed near the hives will quickly be covered with them, and so will a corrugated board over which such water trickles slowly. They like the sweet flavor, while the salt, about a tablespoonful in a bucket of water, seems to suit them and to be good for them. If such a place is provided for them near the hives, they will be saved making a longer voyage, and it may prevent the loss of many bees that get caught too far from home when the wind changes to colder suddenly. Possibly the loss in this way is not as large as it seems, for many bees die of old age in the winter anyway, but we have seen them living by hundreds on the snow after a flight. When there is a hot sun but a cold wind, it is well to shade the south side of the hive that the bees may not be tempted out too soon. While the bees are out is a good time to raise up the hive and clean all dead bees off the honey board, looking them over carefully for signs of the wax-worm, and to make sure the queen bee is not among the dead. If she is, the colony should be united with one that has a good queen.

In some sections bees are let out on shares, the owner furnishing bees, hives for the increase, and receptacles for his part of the honey, and receiving all the increase and half the honey and wax, while the one who cares for them takes the other half of the honey and wax and agrees to leave in each hive enough stores to winter the colony. This agreement is sometimes varied by allowing a part of the increase, and reducing the share of honey or wax, but this is thought to lead to too much increase, while by the other method swarming naturally will not be encouraged. Yet we have known small lots to be let out by one who did not wish the care for them, and all the increase given, and but a part of the comb required by the owner. This is better adapted to the production of comb honey, while the first-named plan is most common for larger lots where strained honey is the principal product. Where foundation or old combs are used in the hives and supers, the cost thereof is usually equally divided. The one who hires them furnishes his own smoker, queen excluder, and all else that is not properly a part of the hive. But these bargains vary in different sections, and there is no universal custom, though that first named is the most frequent where the keeping of bees is most common, and in sections where there is usually a good honey flow.

Beekeeping is a business in which one can begin with small capital. We have known a man to begin with one colony, and in a few years to have a considerable apary by the natural increase of swarming. In a case of this kind the present profit is sacrificed for the increase in number of colonies. But for \$50 one should get from four to six good, strong colonies, with spare hives, supers, frames and section boxes enough to provide for the increase of the first year, also the smoker, bevel, etc., for handling them. We would advise the beginner to start only in the spring, although he will have to pay more for a colony than he would in the fall. But the man who has had the experience can winter them more safely than he can, and it is bad to move them in very cold weather, as the comb is brittle, and if heavy may break down with a slight jar. The danger of this is almost as great as that of moving them in hot weather, when the combs are liable to melt down. We would advise him to take only strong colonies in frame hives. Let someone who is used to it have the pleasure of strengthening up weak colonies, or transferring bees from box hives to frame hives. Either get Italian bees or put a fertilized Italian queen in each hive as soon as possible. They are better gatherers of honey and less troublesome to handle than the black bees.

One may begin with a few colonies without much experience if he will read some good paper that makes a specialty of a bee department, get one or two good books upon bee culture, and not be afraid or ashamed to learn by the experience of others. There is but little chance of any loss with careful management. There are bad honey seasons when there may be but little profit, and there will be others that are more than usually productive. A very wet season may result in a small honey flow, and a dry one in a large admixture of dark honey that will reduce its value, but the seasons usually average to show a fair profit. The work is but slight with a few colonies, and in not many seasons do the bees actually need feeding to carry them through the winter, though we think it would have paid in many cases where it was not done. Yet the beginner can guard against this by not robbing the brood chamber of honey, and by saving some frames or sections of his darkest honey to use in feeding if he thinks it is needed. The most experienced keepers do this.

Few failures if nobody would plot out at the beginning more than he could safely expect to accomplish.

New Tendencies of Trolley Lines.

Some of the latest trolley-road enterprises are likely to be of special benefit to small towns. Most of the earlier electric roads were built parallel to steam lines, connecting only the cities and large towns already provided with railroad facilities, and directly useful to such farmers only who happened to live on or near the line of the road.

But most of the main towns being already connected, there is now a tendency to reach out and secure the business of the farming towns which have never had a railroad of any kind. Already in western Massachusetts, in Connecticut and in parts of Maine, new roads are branching out in all directions, bringing new life to lonely communities and serving as feeders to the steam roads and the main street lines. Many new projects are not street lines at all, but go straight over the fields and meadows, making cuts and fillings when needed at considerable cost. Such lines are capable

event, fifty per cent. of the food given enters into the production of milk.

HOW TO USE COARSE FOODS.

Most of our so-called coarse foods, like straw and corn fodder, are valued low not because wholly of their defective nutritive value, but rather because of their unpalatableness. They are usually not consumed in quantities of more than eighteen to twenty pounds, while other and more palatable foods will be consumed in larger quantities. A cow, if receiving her entire morning ration of coarse foods in one feeding, will select the best first, and when appetite is nearly satisfied will cease to eat the poorer. A division of the morning ration, always presenting fresh food from which there has been no selection, urges on the appetite. The coarser and more unpalatable foods will then be eaten often fully replace in nutritive effect the more palatable food. This I have found in many weight experiments in feeding cattle. Whenever, by art in feeding, a cow can be

considered in making up the grain ration. Where the feeder compounds his ration with reference to the nutrition of the soil, there will be no danger of a deficiency of protein in the ration. All good feeding in New England must consider the relation of the grain ration to soil fertility. The measure of the milk produced on the farm must be the crops it raises, and the first requisite of good dairying is large crop production. To accomplish this end I invariably feed protein foods. Protein is the source of nitrogen, 6 1/2 pounds of the former being equal to one of the latter, and as nitrogen in our superphosphates costs seventeen or more cents per pound, the cow, through rich protein foods, becomes the cheapest source of this element of plant food.

The following table shows the amount of nitrogen, potash and phosphoric acid in the several foods fed, their manurial value, according to a table made by the Pennsylvania Experiment Station, and in the last column, what to the writer appears to be their real practical value:

COMPOSITION OF CATTLE FOODS.		Per Ton.		Manurial Value.	
		Nitrogen.	Phosphoric Acid.	Nitrogen.	Phosphoric Acid.
Barley	100.00	1.20	0.10	12.00	1.00
Oats	100.00	1.10	0.10	11.00	1.00
Rye	100.00	1.30	0.10	13.00	1.00
Wheat	100.00	1.40	0.10	14.00	1.00
Timothy	100.00	0.80	0.05	8.00	0.50
Alfalfa	100.00	1.50	0.15	15.00	1.50
Lucerne	100.00	1.60	0.15	16.00	1.50
Clover	100.00	1.70	0.15	17.00	1.50
Straw	100.00	0.20	0.02	2.00	0.20
Corn Fodder	100.00	0.30	0.03	3.00	0.30
Wheat Fodder	100.00	0.40	0.04	4.00	0.40
Barley Fodder	100.00	0.50	0.05	5.00	0.50
Oat Fodder	100.00	0.60	0.06	6.00	0.60
Rye Fodder	100.00	0.70	0.07	7.00	0.70
Wheat Fodder	100.00	0.80	0.08	8.00	0.80
Barley Fodder	100.00	0.90	0.09	9.00	0.90
Oat Fodder	100.00	1.00	0.10	10.00	1.00
Rye Fodder	100.00	1.10	0.11	11.00	1.10
Wheat Fodder	100.00	1.20	0.12	12.00	1.20
Barley Fodder	100.00	1.30	0.13	13.00	1.30
Oat Fodder	100.00	1.40	0.14	14.00	1.40
Rye Fodder	100.00	1.50	0.15	15.00	1.50
Wheat Fodder	100.00	1.60	0.16	16.00	1.60
Barley Fodder	100.00	1.70	0.17	17.00	1.70
Oat Fodder	100.00	1.80	0.18	18.00	1.80
Rye Fodder	100.00	1.90	0.19	19.00	1.90
Wheat Fodder	100.00	2.00	0.20	20.00	2.00

Tables of the manurial values of food are usually based upon the assumption that all the nitrogen, potash and phosphoric acid is returned in the excrement, and that it is as valuable in practice as the same materials in chemical fertilizers. From ten to twenty per cent. of these are taken up by the cow for milk and meat production. The balance is not so immediately active in the soil as in the form of chemical fertilizers. They are also subject to some losses. This excrement will be unduly rich in nitrogen, and this excess subject to leaching in the soil. This can be obviated by either adding potash and phosphoric acid to the manure or by reducing the amount of manure applied to the soil and adding those materials to the soil. The latter is the writer's method. Where this is not done some loss will occur, and does occur with those who adopt the advice to buy these foods and use the manure by the usual method.

These foods when applied direct to the soil would be worth the sums theoretically stated were it not that the rates used by the stations in forming them are above the cost of chemicals when bought as I buy them in the raw material for home mixture. After due allowance is made, it is the opinion of the writer that they will, in fact, under right agricultural conditions be worth as much and probably more than the sums expressed in the last column of the table. If the cow can be made to pay as she can, the full value of the grain foods fed, then it becomes obvious that the cheapest source of plant food will be rather in the form of grain fed to cows than in chemical fertilizers, and that it should be the first care of the feeder to purchase those of highest manurial value. In thus purchasing them, he at once gets in protein the material that enriches his farm, and at the same time furnishes the material for the cow in such quantities to form what is termed a well-balanced ration. It is for this reason that I assume that all good feeders unconsciously give a ration that makes it unnecessary to enter into figures to determine whether there is one pound of protein given to every 5.4 pounds of carbohydrates and fats, as Germans assume we must. Years of research, however, have convinced the writer that one pound to seven, or even a wider ration, may be effective. Several stations have confirmed this early view of the writer.

THE CORN MEAL QUESTION.

It will be seen that corn meal should be, for the cheaper coarse rations, very largely avoided, both in the interest of milk production and of soil fertility. The meals that serve best both ends mentioned, animal and plant nutrition, is either gluten meal, linseed meal or cottonseed meal. These, however, are very concentrated, and tend to inflammation if fed. They should be supplemented with bran, middlings or some bulky and less protein food. It has been found that a ration of bran and corn meal is more effective than corn meal alone, and that even bran mixed with the gluten and cottonseed meals will cost less and give nearly as good results as these alone, and at a cheaper price, insuring the freedom of the cow from inflammation of the udder. Gluten meal, however, gives a soft butter, and for butter production should be mixed with a somewhat meal that hardens it. There is no single grain food, in quantity, texture, flavor and quality of butter, that exceeds corn meal. This should enter into the grain ration of a butter-producing cow, forming, say one-third of the ration.

LIMITS OF HIGH FEEDING.

The total amount of grain that should be

fed is dependent upon the market rates of the product. I have found that in well-matured ensilage enters to the extent of thirty or forty pounds, grain in amounts of more than six pounds, while increasing the milk flow as the ration increases up to even twelve or more pounds per day, does not increase this milk flow under ordinary prices of milk and butter, as fast as the cost increases. After a very careful survey of the experiments of the country, I am convinced that where a palatable and skillfully fed ration of coarse food is given, the dairyman selling at ordinary prices will not find it profitable to feed grain rations much, if any, exceeding five or six pounds. Large productions of milk must come, if at increasing profit, from the highly bred and selected animal liberally fed, as before stated, with these coarse foods.

Gilmanston, N. H. J. B. SANBORN.

Saving Crops Saves Dollars.

A year since we began the accumulation of a yard or cellar (I hope cellar) full of fertility. I am sorry, however, that a large majority did not get either full; but, much or little, the manure represented cash value, and when we distributed that on our fields last spring, it was exactly like taking out our money bag and picking out gold dollars and throwing one here and another there, so far as expense figured. Now, I hope we all covered those dollars, so that they would not prove a constant object of temptation, that an ill wind at some unguarded moment shifted from our field to our neighbor's. ut yet we trust reliable memorials were set up in that burying-ground, so we might be in touch at the resurrection, which ought in liberal part to have taken place ere this. If the coming forth was in the likeness of a corn or potatoes, cabbage or turnips, pumpkins or mangolds, hay or grain, millet or sorghum, or any other of the numerous earthly apparitions, then we have before this time covered the dollars in the pool with others from our purse, though we called it labor, board and teams. It matters not what the drawer's name was on the check, it is the signer who places the manure there.

We have amidst many trials and perplexities, and sometimes with the load almost sunk in the slough of despond the present weather-stricken season, hauled these precious dollars to our barns and granaries, and if we carry consistent insurance have them more nearly in our control than ever before since we entered the gamble; for everything that the hand of man is laid upon is a gamble in the root sense of the word. Now it becomes a matter of business investment of our dollars, in what the brokers call listed securities, and here our common sense and judgment is at stake. Shall we so deliver these valuable dollars to our bank deposit that the express company delivering them shall be amply protected from that well-known band of robbers, Bad Rot, Big Shrinkage and Careless Waste? Leighton's Corner, N. H. A. J. HAMM.

A First Lesson in Pig Raising.

When I started in the pig business I thought I knew all about it. My father used to keep a good many hogs, and I thought when I had fifty pigs about of an age I would show my father a thing or two about raising hogs. He said to me one day when he looked at my pigs: "Young man, what are you going to do with those pigs?" I replied: "I am going to have them at six months weigh more than yours." "Very well," he said, "six months will tell." I commenced to feed those sows all the corn they would eat and whey from the cheese factory.

The pigs began to respond very well and grew rapidly. I kept the pigs shut up in a place three or four times as large as this room. In six weeks from that time, of the fifty pigs, I had nine left, and it was all on account of the manner in which I had fed those sows. I had spoiled my pigs with kindness. If I had fed middlings and milk or middlings and whey with a little corn, and given them pasture, I might have shown my father how to raise pigs, but as it was, he showed me. H. P. WEST.

Fayetteville, Wis.

Manure Saving.

If animal manure is allowed to remain exposed under the eaves of stables or in small heaps in fields they rapidly depreciate in value. There may come a greater loss from heating, as by this process the nitrogen is lost and the organic matter consumed.

All of these losses should be stopped by careful covering, by mixing the manures from all animals, by keeping the heaps leveled and tramped, and by placing the manure promptly and evenly upon the land. I would extend farm manures over as large an area as possible and depend upon thorough plowing, careful tillage and supplemental manuring with chemicals to bring the yield of crops up to a maximum. Orono, Me. C. D. WOODS, Director.

Rotation for Potato Growers.

A very good rotation is to grow potatoes with either farm manure or a commercial fertilizer; the next year seed with grain, mixed with alkali or red clover; the third year out one crop of clover, and plow under in the fall to have it ready to grow the potatoes on again. You get the advantage of a large amount of nitrogenous matter in the soil from the roots and stubble of the clover. We apply manure broadcast and work it in. With a commercial fertilizer we plant with planters, and apply in the planter at the time the potato is planted. Orono, Me. PROF. C. T. WOODS.

Hurry is out of place when caring for stock.



LIGHT BRAHMA.

of high speed and regular service, being little inferior to a steam line for short journeys. Many a town will enjoy good passenger facilities and often a freight, mail and express service by the construction of an electric road, where a steam road could never hope to do a paying business.

The quality of electric-road service constantly improves. They are better graded and ballasted, use heavier rails and ties, larger cars, better lighted and heated and with better seats, more competent help, lower fares, faster and more regular service, with expresses on some of the lines. With a few more years of development there will be little to complain of in the opportunities afforded for local travel in the country. Just now there is a boom in construction of electric lines all over the North-east, and it is likely that during 1903 it will be exceeded by the great record of new mileage for the past year. The new lines, too, will be of a better grade generally, and will be especially helpful to the isolated towns.

But however charming may be the prospect of a local rail service, towns should be warned against attempts likely to be made to secure public money as a grant to the railroads. Experience has proved that such grants are taxpayers' money thrown away. When an electric construction company has planned to come, it is sure to carry its project through without regard to local aid, and the promoters consider themselves lucky if the towns do not make the road pay in some way for their franchise. Yet some towns in their enthusiasm have hastily made large grants, which have left a debt unpaid and lamented for years. In these days a trolley road is laid out only after its promoters have concluded that it will yield a steady profit. These promoters are wealthy owners of other roads and have not the slightest need of local capital. Their enterprise should be carefully watched and made to yield utmost benefit to the welfare of the town.

Feeding for Profit.

A very careful and thoughtful statement of some recent developments in feeding, much cows has been prepared by Prof. J. W. Sanborn for the Maine State Department of Agriculture. After years of experience as instructor at various experiment stations, Professor Sanborn has for several years past been successfully working out his own ideas on an extensive farm in Gilmanston, N. H. His conclusions are those of a student and a practical dairyman, as given below:

One of the essentials of successful dairy feeding is that the largest amount of excess food should be given that the cow can economically convert into milk. Some sixteen pounds of food are required for maintenance. If we stop at twenty-four pounds, then only 33 per cent. of the ration becomes productive, whereas if the cow has high possibilities of digestion and assimilation, thirty-two pounds in some cases may be fed with constantly increasing product, as the ration rises to this point. In such an

induced to eat, which will always be when her appetite is sharpest, small amounts of unpalatable foods, they should be given in very small and frequent rations, so long as they are acceptable. Provided one is feeding a cow of very large capacity for production, the final ration of the morning or the evening should be of the most palatable foods in the barn; choice bits of early-cut hay, or clover, or silage.

The feeder, however, must study closely the individual capacity of each cow fed, watch her product, and cease to press the appetite when it is found that the rise of milk flow does not keep pace with the increased ration fed. It has become quite well settled by experiments at the Ottawa Experiment Station, the Vermont and other experiment stations, aside from those of the writer that confirms others, that a cow or a steer can be induced to consume more than is economically desirable. Ordinarily, however, in feeding the coarse rations, this need not be observed, but rather in the more costly and purchased grain rations. The farmer's business is that of crop raising, and it should be his first care to secure as large a consumption of home-grown foods as possible, and if by any art of feeding by combination of foods the capacity of the cow for milk production can be realized with home-grown foods, these should be fed. Experiments conducted at the New Jersey Experiment Station and other data, appear to show that by the growth of more palatable protein foods cheaper milk can be thereby produced than by heavy purchase of grain. In other words, there can be such an adjustment of protein to carbonaceous foods from the home-grown coarse foods as to decrease the amount necessary to be purchased in grain foods. The best coarse foods for milk production are ensilage (in which nearly matured ears form a part), clover hay, oat and pea hay mixed and Hungarian.

FOODS THAT MAKE MILK.

Clover is undoubtedly, as yet, and likely to remain so, our most valuable source of protein in the coarse foods. It is found difficult to grow this crop in New England. If, however, ashes are sown at the time of seeding, or one hundred to 150 pounds of muriate of potash and 350 or so of either plain or acid phosphate is sown with the potash and harrowed in, there is a fair assurance of a good clover crop. Where one-third to two-fifths of the daily ration is made up of clover and oat and pea hay, as peas are a protein food, only a moderate amount of protein in the grain ration will be required.

I have not discussed the balanced ration, nor shall I present tables in its discussion, for after years of special investigation of the subject, I am convinced that where such a ration as above named is fed, there will, with the ordinary mixed grain ration, be given an adequate amount of protein for necessities of milk production. In case the ration is made up of straw or corn fodder, timothy hay and immature silage, there will be a deficiency of protein, and this must be

Milk Situation.

The milk farmers who ship to Boston contractors were numerous represented at the meeting in Boston Jan. 16. The members of the association appeared well satisfied with recent progress, which includes a rise of 6 cents a cwt during the past three years, and better arrangements in regard to the surplus milk. The treasurer's report showed a balance of \$300.25, which is the best financial exhibit yet made. The number of local unions had also increased, and the opinion was expressed that the membership should be extended to cover as fully as possible all the milk-shipping territory and to include every milk shipper.

Contractor Graustein came in for some very strong criticism for trying to make bargains outside of the agreement with the union, and the Boston Dairy Company was claimed to be covering too much territory and carrying out its contracts in a manner not satisfactory to shippers.

Resolutions were passed instructing the executive committee to confer with the contractors in regard to securing better freight rates from the railroads. By the present plan, the shipping sections are divided into ones, and shippers pay contractors one cent extra freight for each successive zone through which their milk has to pass. It is contended that the extra freight cost is really only six-tenths of a cent for each zone, and that even this cost is too high. Shippers want the freight charges for milk lowered, and also the zones made wider. This matter, and also the summer price of milk, will be taken in charge by the executive committee of the union.

The election of officers resulted in the choice of the energetic New Hampshire delegate, H. A. Seamon, who declined to serve, leaving the contest between Henry E. Bullard of Holliston and Prof. J. B. Sanborn of Gilmanton. N. H. Professor Sanborn expressed himself as not wishing the office. His alleged preference for a surplus clause in milk contracts lost him the support of those taking the opposite view, and Mr. Bullard received the choice by a large majority.

President Bullard is a large shipper, and has one of the most valuable and best appointed farms in his section. He has been quite prominent in a business way, having encouraged various manufacturing enterprises to locate in his town. He is apparently not over fifty years of age, and is regarded as a man of conservative energy and enterprise.

Teachers of Country Schools.

One serious drawback to obtaining trained or fairly efficient teachers in many of our towns is the small pay given to teachers, in some cases less than \$4 per week. This extremely low compensation frequently results from inability to pay more. Taxation is heavy, the people are burdened.

This condition leads to the conclusion that the school tax required by law should be equally levied upon the whole State and distributed from the State treasury. This would be an extension of the principles embodied in the law of 1899, which has resulted so beneficially in the smaller towns, and its application to the whole State. This theory was endorsed by the State Grange.

Too little attention is paid to the selection of teachers. Many are unprepared for the work in relation to their own education. School boards are inefficient, careless or indifferent.

It is believed that the situation would be bettered by some well-considered law placing the teachers' certificates entirely in control of the State.

A. J. HAMM.

How to Make Soup Stock.

Ten pounds of lean beef cut from the shoulder or under part of the round, one large onion, one large carrot, a thick slice of turnip, three stalks of celery, three dozen pepper-corns, six cloves, a stick of cinnamon, three bay leaves, a sprig of sage, a bit of parsley, thyme and summer savory, three teaspoonfuls of salt. Red the beef of all fat, and cut into small pieces. Put in a soup kettle and cover with cold water. Heat slowly, watching it all the time, and as soon as the water begins to boil, skim it carefully, repeating the operation until the liquid has been thoroughly skimmed and no more scum rises. Keep the soup at the boiling point for six hours. A slight bubbling is enough. At the end of the six hours add the spices, salt and herbs, and simmer one hour longer. When the hour has passed, draw the kettle forward, let the soup boil rapidly for one minute, strain through a piece of coarse muslin, and set away to cool. In the morning remove the fat, and put the stock on the stove with a pound of lean, raw beef chopped very fine. Heat slowly to the boiling point, stirring often. Beat the whites of three eggs light, but not stiff, add to the soup, and keep at the boiling point one hour. Strain through a cloth ready to serve.

This gives not only the soup, but the remnants of eleven pounds of beef, with all the nutritious properties removed. The meat itself has cost from sixty-six cents to a dollar, and there has been a large amount of fuel used. Without counting the seasoning, flavoring and time, the soup has actually cost from twenty-five to thirty cents a quart, and the meat is a total loss, since it has been cooked to rags. Happily, there is an easier way.

Two hours before the soup is wanted, slice a large onion into a deep granite-ware pan. Add a thick slice of turnip, cut fine a large carrot, sliced, three stalks of celery, including the green tops, three dozen pepper-corns, six cloves, a stick of cinnamon, three bay leaves, and a sprig of parsley. Cover with cold water, bring to the boiling point and simmer slowly until the vegetables are cooked to pieces—probably about an hour and a half. Strain through coarse muslin and measure the liquor. For each quart of liquor, use one heaping teaspoonful of beef extract. Dissolve the extract in a little of the liquor, and add to the rest. Boil up once and serve. This method does away with all waste of meat, fuel and time, and is an actual saving of money. It would take an expert to tell the two soups apart.

With the simple beef stock as a foundation, any number of good soups can be made, using almost any left-over vegetables.

—The Brown Book.

How to Build a Telephone Line.

The first thing to do if you want a telephone line in your neighborhood is for the farmers to get together and organize, adopt a set of rules to govern the company, elect a president, vice-president, secretary and treasurer and a superintendent and an executive committee, stating the duties of each.

It is better to go at it in a business-like manner, estimate the probable cost and fix shares accordingly, and for the good of all, allow each man one vote no matter how many shares he may hold. This keeps the line from being monopolized by a few.

The amount of shares in the line with

which I am connected is \$10 each; the holder pays over to the treasurer \$5 and agrees to furnish ten poles, but where poles can not be had and the company will be obliged to buy them, the full amount of stock must be paid in. This way our company has built about sixty miles of line in the last three years, and each stockholder who wishes a phone buys it himself and all stockholders have the free use of the phone.

To those who have no stock on a farm line, the sum of ten cents is charged, one-third of which goes to the party who collects the fee, and the balance, two-thirds, goes to the company. Every three months a report is made to the secretary of the amount of money collected and the condition of the line in his vicinity.

Don't make the mistake of buying a cheap phone. A good one can be had for \$14 or \$15, and such a phone carefully handled will last a lifetime. We prefer the dry batteries, they have given better satisfaction. The poles should be good size, at least four inches at the top, and firmly set in the ground 3 1/2 to four feet, and poles, especially when a turn is made, securely guyed by a wire. This prevents them from leaning and loosening the wire. Before a pole is raised, firmly spike a bracket to it. We use a No. 12 wire and for a short private wire, No. 14 will do. No. 12 goes about 100 rods to the hundred pounds. Considerable attention should be given to the wire tight. In stringing out the wire a reel is made, a bundle of wire is placed on the reel in the back of a wagon, and in this way, three good men with light ladders can put up wire quite rapidly. But it will pay you if an experienced man can be had to put up the phones in your homes. On our line the man we contracted phones from put them all up and started them to work. The same kind of phones should be used on a line if possible.

If you wish good service, don't have more than fifteen phones on a line. A line too heavily loaded will not give you good service. If more phones are wanted, have a switch. Each station is given its ring, such as the "Central" one long ring, next station, one short and one long ring, and so on. In this way as many as you want for one line can have different rings.

Butter Lower, Cheese Firm.

Said George A. Cochran, the well-known Boston exporter: "The butter situation has turned out as I expected. Great amounts were held for speculation in hopes that the anti-oleo law would create a demand for butter at very high prices, but the expectation has not been realized. More oleo was made in the past year than in 1901. Speculators who have been holding butter for the expected rise are forcing it on the market at lower prices, and a drop of three cents has been placed. Grades of butter suitable for exporting are still three to five cents too high for buyers to touch it. The value of these export grades is yet to be determined, because the market is very dull and no sales are made. Holders are waiting for the situation to become settled. I think it will have been sold at prices which will make it possible for exporters to handle it, since the home market can take care of only the better grades. The present English market for exports is not very encouraging, supplies in hand appearing ample.

"The cheese situation is very firm. The stock on hand is light, and the best grades are hard to obtain in sufficient quantities. The consumption of cheese in this section would be much greater if consumers could rely upon the best quality. In foreign countries much larger quantities are consumed. An Englishman buys cheese in lumps of five or six pounds, and keeps it on a little at a time as required, keeping the remainder covered. The New England housekeeper is likely to cut the whole lump into little cubes which soon form a rind, hard and bitter, and but little cheese is wanted in such a condition."

Receipts at Boston for the week were: 9487 tubs and 1635 boxes, a total of 468,324 pounds of butter, compared with 515,447 pounds same week last year. Oleo 68 packages, compared with 776 last year. Cheese 123 boxes, besides 500 for export, as compared with 2068 and 10,156, respectively, same week last year.

Fresh creamery has accumulated to a considerable extent in New York market. Buyers are seemingly afraid of the situation and unwilling to take large lots, until they see which way the market trends. The standard quality, which is the best, is at least three cents below recent figures. The slowness of the demand even at the lower prices leads some dealers to think that the drop has not yet reached lowest point. Quotations for poorer grades have not changed so much, for the reason that few sales have been recorded upon which changes could be based, the demand being very dull. Receipts of all grades Wednesday were 8129 packages. Markets of other Eastern cities have followed those of New York and the West, but at Baltimore and some of the Southern markets supplies do not appear so abundant, and prices are better sustained. Baltimore quoted 29 cents Thursday for standard creamery.

In cheese the New York market is in good condition, with holders firm at full quotations and in no apparent haste to urge sales. The top quotation Wednesday was 14 cents, with receipts of 6837 boxes, of which nearly one-half was for export. The export demand is for the cheap grades, and exporters are picking up as much as they profitably can. A New York dealer has bought a carload of Wisconsin twins at 13 cents at shipping point.

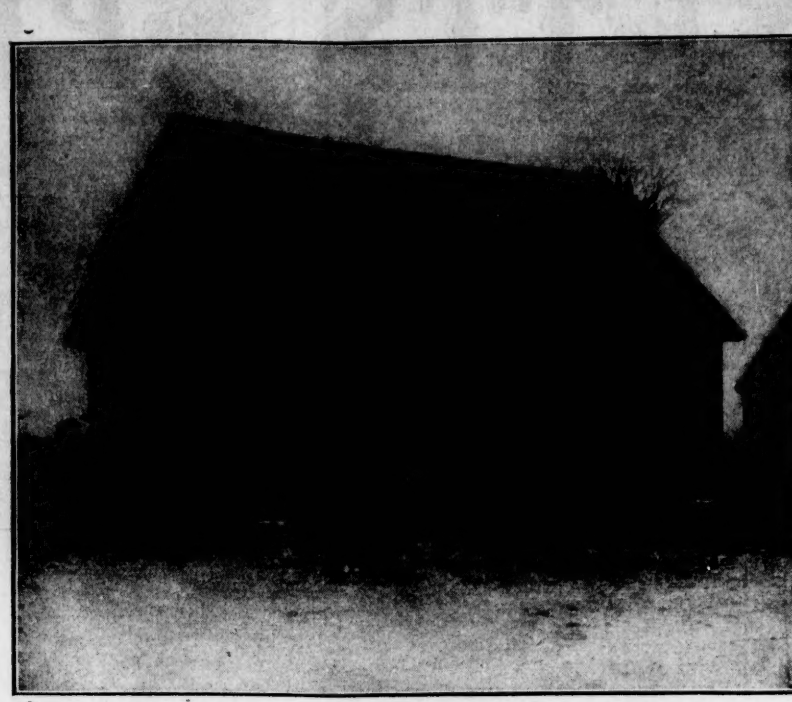
The Hay Trade.

The general condition of the hay market remains about the same as noted last week. The stock on hand is light with no surplus, and prices hold firm. The scarcity of cars for shipment continues, and under such conditions, a decline in quotations will not be looked for. How long these conditions will hold depends more upon the transportation companies than upon the supply of hay, which is probably ample, if it could reach consumers.

In Boston the choice grades are in strong demand, and very scarce, fancy hay would easily bring almost any reasonable price. There are very few sales above \$18, but the better grades easily bring \$19 or \$20. Lower grades are plenty and dull. Rice straw is in light demand, but prices are steady.

At New York the receipts have increased somewhat as compared with the preceding week, but prices hold firm and the demand steady. Shipments from farming districts within convenient reach of New York seem to be increasing, farmers being tempted to sell their surplus by reason of attractive prices now offered. The demand is excellent, and there is no special reason to suppose that an increase of supplies will force quotations down.

At Philadelphia there is also some increase in receipts, but prices are unchanged. At Baltimore the market is fully supplied,



APPLE HOUSE OF J. M. FISK, ABBOTSFORD, QUEBEC.

and any further increase would probably weaken prices, which are now \$18 and \$19 for No. 2 and No. 1. At Cleveland the market is reported firm and higher. At Chicago the offerings are light and the prices are firm.

The following are the highest prices for hay in the markets mentioned: Boston \$19.50, New York \$21, Jersey City \$22, Philadelphia \$20, Pittsburgh \$17, Buffalo \$16.50, Kansas City \$13, Duluth \$11, Minneapolis \$11, Baltimore \$19, Chicago \$14, Washington \$18, Cleveland \$15.50, St. Louis \$15.

Experts are doing considerable thinking just now concerning the future of hay prices for the balance of the season. The following table, condensed from the Hay Trade Journal, shows how quotations have ranged in previous years. It will be seen that in many cases prices tended to reach highest point late in the season, when old stocks began to get scarce and before the new crop was harvested or fit for use. The figures are for No. 1 grade.

	No. 1 Highest	No. 1 Lowest
1894-5, May	\$16.25	\$13.25
1895-6, Feb.	19.00	14.25
1896-7, May	19.00	14.50
1897-8, Aug.	15.75	12.00
1898-9, Mar.	15.00	11.12
1899-0, July-Dec.	17.00	12.00
1900-1, Aug. Oct., Feb.	15.00	12.00
1901-2, Aug.	15.00	12.50
Ave., 8 years	\$17.38	\$13.56

Provision Markets Firm.

Pork provisions have been very uneven in price for some weeks, owing to alternate large or scanty shipments of hogs. Receipts of hogs at Boston were slightly less last week than for some time, reaching 26,000, which is, however, a little above receipts for the same week last year. Pork for export reached a value of \$160,000, which is about the usual total of late. Prices in Boston range a little higher.

Packing operations in the West during the past week were about the same proportions as in the preceding week. The total Western packing was 470,000 hogs, compared with 480,000 the preceding week and 380,000 two weeks ago. For the corresponding time last year the number was 575,000 and two years ago 600,000. From Nov. 1 the total is 5,335,000, against 6,825,000—a decrease of 1,470,000, or about 21 per cent.

Receipts of hogs at principal Western points, Jan. 20, were a total of 62,275, compared with 94,757 at same time last year. This shortage largely accounts for higher pork prices in the East.

The beef situation in principal markets of the country is dull and unchanged. Beef arrivals for the week at Boston were larger, being 120 cars for Boston and 93 cars for export, a total of 213 cars; preceding week, 121 cars for Boston and 54 cars for export, a total of 175 cars; same week a year ago, 146 cars for Boston and 104 cars for export, a total of 250 cars. The market for lambs is firm, with prices tending to rise, and veal is also holding or exceeding last week's quotations.

The supply of choice poultry in Boston is limited, and prices have improved. Receipts Jan. 20 were 628 packages, compared with 1643 packages last year. For the week receipts were 4233 packages, compared with 7897 last year, same time. The shortage is evident, and the demand is about as good as usual at this season. Market is firm for choice stock of all kinds. Best live fowls bring 13 cents, and are fully as profitable to ship from nearby at present; the same bringing only about 14 to 15 cents, dressed.

Best Western turkeys bring 19 to 20 cents, but are in light supply and demand. Ducks are scarce. Geese are not wanted now to any great extent. Demand is steady for choice Northern fowls and chickens. Venison is in moderate supply, with whole deer selling at 15 to 20 cents. Bear meat also brings 15 to 20 cents. The game supply is fair. Black ducks sell at \$1.75 to \$2 per pair; redhead ducks, \$2.50; wildgeese, \$1; teal, \$1.10. Philadelphia quail are firm at \$4 to \$4.50 per dozen, with natives at \$3.50 to \$3.75; quail, \$4.25 to \$4.50 per dozen; plovers, \$5 to \$6 per dozen.

Supplies in New York are not large, although important shipments are said to be on the way. Fancy, soft-meated chickens are scarce, and hardly enough for sale to establish quotations. Fancy nearby chickens are firm at quotations. Capons are in fair demand. Geese do not seem to be wanted in this or other markets at present. Squabs are in moderate supply and prices steady. Frozen poultry is held firmly, dealers expecting higher quotations.

Grain and Flour Firm.

The grain-carrying railroads from the West are crowded with thousands of cars of grain, which they are unable to move fast enough. Four Western roads have refused to take new shipments for the present. Meanwhile Eastern roads are doing their utmost to clear the tracks. Wheat and wheat products hold firm in Boston markets, with quotations for flour and cattle feed a shade higher. Corn meal is a point or two lower.

C. A. King & Co., New York, say of clover seed: "January shipments are always large. There were 22,000 bags last year, and the same two or three years ago. In 1898 there were only 17,000 bags from that enormous crop. This year there will be from 20,000 to 25,000 bags. In February last the shipments were 16,500 bags, against 20,000 two years ago, 26,000 three years ago, and 19,000 four years ago. March shipments last year were 36,000 bags, the largest of

any month in recent years. Two years ago there were 30,000 bags, three years ago 20,000, and four years ago 30,000. April shipments are smaller. There were 12,400 bags last year, against 18,300 two years ago, 18,000 three years ago and 14,300 four years ago."

The Chicago wheat market closed Tuesday at 79 cents. Local receipts were sixty-three cars. There was a sudden revival of export demand from the United Kingdom for Kansas patents, and five thousand sacks were worked in sacks Tuesday, which was the first demand from the same source in a month. The same markets also took three thousand sacks winter wheat patents Tuesday and Wednesday at \$3.65 in sacks. Large flour shipments have been made to South Africa.

Two hundred thousand tons of breadstuffs must be imported from wheat-producing centres to Australia during the coming season to meet harvest deficiencies, says United States Consul Goding at Newcastle, in a report to the State Department at Washington. Fifteen thousand tons of California flour are afloat for New South Wales, but the consul says the price of California flour has risen so greatly that the effect will be to divert a good deal of trade to Canada.

Last year's corn crop is the largest ever known. The Agricultural Department estimates the yield in Illinois, on the basis of twenty-five bushels to the acre, to be 320,070,000 bushels, while the five other great corn States run: Kansas 250,126,000 bushels, Iowa 247,646,000 bushels, Missouri 246,000,000 bushels, Nebraska 234,540,000 bushels and Indiana 133,288,000 bushels. These States furnish half the total crop of 2,234,382,000 bushels. Corn is grown in every State and Territory, Wyoming's product, 26,000 bushels, being the smallest.

Eighty per cent. of this crop does not move from the farm except as it travels in the issues of hogs and cattle. Four cents a pound for hogs on foot equals forty cents a bushel for the corn—the same farmer figures. Ten per cent. of the crop is used for whiskey and food and ten per cent. is exported, the bulk of it going to England (79,844,843 bushels) and Germany (36,992,634 bushels.)

Wool Markets Firm.

Boston wool market is not remarkably active, but prices are well sustained in all directions. The stock on hand is limited. The mills are all busy, and the demand for manufactured goods continues steady and is not likely to cease for the present. Ohio delaine is in good demand, and fifty thousand pounds were sold at 35 cents. Australian wool is in firm demand, and the supply is limited, it is reported, and foreign markets are advancing. Canada combs are also in limited supply. The situation in London is strong, with some advance looked for at the coming auction, the sales beginning this week.

Learning from early experience, the New England Milk Producers Union has, during recent years, fixed its attention strongly upon some definite item of improvement. As a result, considerable progress has been made. Prices have gone up and surplus has come down. Best of all, the producers have learned how to pull all together and hang to it. The contractors are at last afraid of the union, and no longer assume to have things their own way with the help of a few smooth and plausible speeches. The union will next try to have the freight charges on milk adjusted and reduced. Sooner or later their just and reasonable wish will be realized, as it always is when farmers have learned to combine for an object, and stay combined, and pay the necessary bills.

Literature.

Intimate study of the various types of animal life leads to the conclusion that the lower species possess pronounced individualities. Mr. Egerton R. Young in his book, "My Dogs in the Northland," has introduced to the public many instances of the various instincts and high degree of intelligence possessed by some of his dogs, which he carried home many thousands of miles over the frozen snow in the North. The only means of travel being dog trains, the master and drivers have plenty of opportunity to observe their four-footed comrades who often save their master's life by their intelligence. For nearly thirty years Young lived in the North, his regular mission being laying from Winnipeg, about seven hundred miles to the north west through the Hudson Bay country. There he endured many and indescribable hardships in the land of snow and ice. But the result of his long, hard toils by dog-sleds, in order to reach the scattering Indian tribes, is such as to repay any man the sacrifice of the best years of his life. The elevation of the condition of woman and the advancement of the Indian in farming and in the manner of general living, prove that the missionaries have succeeded in producing marked changes in the condition of this sturdy people.

Mr. Young gives much credit to his dogs in the battle with ignorance and hostility. They were his means of communication and upon their courage and intelligence often depended his life and the lives of his men. The reader cannot but admire the indomitable and loving "Jack," whose place was taken by his master's side when he lay down to sleep on the snow field under the stars. Mr. Young desired to replace the wild dogs because they were such thieves, and he implored his friend to send him some dogs. "Jack" and "Cuffy" came in response to

his plea, and they became house dogs as well as dogs for the harness. The great feats both of strength and intelligence performed by "Jack," and his loving devotion for his master's welfare, command one's admiration and love for this giant servant and guardian. "Cuffy," a beautiful animal, is also of an affectionate disposition, and a faithful worker. Mr. Young delineates the special peculiarities of his dogs, as well as their personalities, which are all very interesting. "Voyageur" is remorse and sullen in his position as leader of the dogs. In the training of another dog for leading "Voyageur" is displaced, and this indignity imposed upon him breaks his heart. He soon after dies, drooping from that hour, and showing how his whole being was wrapped up in his leadership. "Roger," the medicine dog, is a coward, yet loving and gentle. After his days on the run are over he details himself to look over the dogs when they come in from a journey and care for their wounds. His tongue is his means of cure, and if the injury cannot be reached by the tongue the dog generally dies from gangrene.

In the special danger encountered, Mr. Young relates how often his dogs help him out. When the path became lost nothing was left but to depend upon the faithful animal of the sleds. It is a most fascinating book. The author's style is clear and graphic. The descriptions of his journeys, his method of camping, the manner in which his sled is made for the night, and the ways in which food is carried, are all subjects of much interest. While the main theme is that of his dogs, Mr. Young touches enough on his manner of life in the North as to give the reader a clear idea of the missionary's work and dangers in this region. As an animal story the book would be entertainingly instructive, and with the full descriptions of the settings in which Mr. Young and his dogs labored, "My Dogs in the Northland" cannot fail to arouse the reader's interest. A few needless repetitions alone mar the work. [New York: Fleming H. Revell Company. Price, \$1.25 net.]

A story of the strained feelings in families whose members disagreed as to which side in the civil war they duty to the country called them, is related by Mary Harriott Norris in her book, "The Grapes of Wrath." The plot is simple, consisting of well-drawn pictures of the horrors of the war, the poverty of the South and the bitterness of the North. A son of the Manners family marries a Southern woman and has two grown daughters at the time of the outbreak of hostilities. They are sent North for safety, and with their hot Southern blood they suffer many instances of Northern thrift and scorn for their careless ways in the home, while their tempers are sorely tried whenever the subject of war is broached. They are human, and they demonstrate that they can be both brave and unselfish before the war closes. They finally go back to their home, protect their weak, feeble mother and there nurse both their uncle and their cousin through sicknesses. The differences in patriotic principles are forgotten in the presence of the suffering and the grief of death. Glances of General Lee are given, while the poverty suffered by the Southern defenders of their own property is vividly depicted. The book presents the usual picture of the fortunes of war, and it will interest the reader who enjoys the theme. The writer shows no little originality, despite the well-worn topic which she has selected. Her characterizations are the best part of her work, for she is able to make marked individuals of her characters. There is a divergence of interest in apparent in some places which in part mars the completeness of the picture. Some characters are introduced who seem to have no part in the plot. The author's portrayal of General Lee, the indomitable and skilled Confederate leader, is a conspicuous feature of the book. There is a naturalness about the two Manners' girls which is refreshing, and in them lies the centre of interest. Boston: Small, Maynard & Co. Price, \$1.50.

Dr. Edward Everett Hale always has something interesting to say, and his advice is worth listening to. In "How to Live," a new edition of which has been issued, he talks in a businesslike and practical manner to his audience. "To sleep well is one of your duties," says the veteran author. Of all people the Americans need sleep, and yet they doubtless sleep the least of any nation. The lesson of repose is one we have yet to learn. Stronous lives wear the nerves to the limit, and when the whole nervous system revolts the situation is indeed a serious one. Sleep is the nerve's restorative, and Dr. Hale wisely places it as one of man's first duties. The subject of exercise is considered, the advice under this topic being to take the open air treatment—especially are women urged not to neglect this prevention against sickness. Under "Appetite" he gives some extremely reasonable directions in regard to the forming of unnatural appetites. Considering "How to Think," Dr. Hale asserts that the memory and the faculty for reason should be carefully trained, for upon them depends the rapid action of the mind. Simple and effective ways of study are suggested. The manner of obtaining the most effective results from the expenditure of time and concentrated thought is explained. "How to Know God," "How to Dress" and "How to Deal with Children" are some of the other subjects treated in characteristic style by Dr. Hale. The book contains many healthy and practical directions for living one's life so as to obtain the best results. The personal of the contents, especially by the young man or woman, should be beneficial. To live life as a divine gift from God necessitates living it wisely and painstakingly, and it is well to learn how best to accomplish this purpose. One may wish that Dr. Hale had written more at length on some subjects, such as "Sleep" and "Appetite," especially the latter. Temperance in all things is such an important rule in a healthy life that it is worthy lengthy consideration. [Boston: Little, Brown & Co. Price, \$1.00.]

"John Greenleaf Whittier," by Thomas Wentworth Higginson, is a welcome addition to the interesting series, "English Men of Letters." It is an admirable biography of the Quaker poet, in which no phase of his somewhat uneventful career, except so far as he was connected with the anti-slavery movement, is neglected. Mr. Higginson has made the most of the material placed at his disposal by various friends and correspondents who were familiar with Whittier's life, and has availed himself of the suggestions of Samuel T. Pickard, who was the authorized biographer of Whittier, and whose work is recognized as the most valuable and complete record of the poet's personal history. Mr. Higginson says that if the American traveler happens to attend English conventions and popular meetings he will be likely to hear Longfellow and Whittier quoted often than any other poets who have

written in the English language. "This parallelism in their fame," Mr. Higginson goes on to say, "makes it the more interesting to remember that Whittier was born within five miles of the old Longfellow homestead, where the grandfather of his fellow poet was born. Always friends, though never intimate, they represented through life two quite different modes of rearing and education. Longfellow was the most widely traveled author of the Boston circle, Whittier the least so; Longfellow spoke a variety of languages, Whittier only his own; Longfellow had whatever the American college of his time could give him, Whittier had none of it; Longfellow had the habits of a man of the world, Whittier those of a recluse; Longfellow touched reform but lightly, Whittier was essentially imbued with it; Longfellow had children and grandchildren, while Whittier led a single life. Yet in certain gifts, apart from poetic quality, they were alike: both being modest, serene, unselfish, brave, industrious and generous. They either shared or made up between them the highest and most estimable qualities that mark poet of our time. After alluding to the fact that Whittier did not belong to what Dr. Holmes liked to call the Brahmin class in America or those who were bred to cultivation by cultivated parents, Mr. Higginson remarks that the Quaker tradition had a Brahminism of its own which Beacon Street in Boston could not rear or Harvard College teach. All this precedes a clear account of Whittier's childhood, with copious extracts from "Snow-bound" illustrating his poetic home surroundings. Following, we have, among other things, concise yet comprehensive references to his experiences as a politician and reformer, his personal qualities and his youthful loves and love poetry. A chapter is given to his home in his mature years, and another deals with his religious belief. His position as a poet is well defined by Mr. Higginson, when he calls Whittier the distinctively American poet of familiar life. Like Burns, who was his literary master in verse, he is the bard of the people, and he will be longer remembered than most of his contemporaries among the American singers. Considering his physical drawbacks, he was certainly a prolific writer in both verse and prose, and Mr. Higginson says: "There was no literary man of his time who worked under such a life-long embargo in respect to health as Whittier." In lucidity of style and freedom from over-coloring, this biography affords a model in its way, and may be relied upon for correctness of statement and justice of criticism. It is a well-considered and carefully executed piece of literary work that will please the scholar and the general reader as well. It is a simple, straightforward record of the career of a man who was simplicity itself in all his dealings with his neighbor and the world. [New York: The Macmillan Company. Price, \$1.00.]

As the third volume of the St. Lawrence series we have "Cruising on the St. Lawrence," or a Summer Cruise on the St. Lawrence, a volume that continues the adventures of Bob, Ben, Jack and Bert, after they have completed their sophomore year at college. The author, Dr. E. T. Tomlinson, has introduced into the pages of his new story a great deal of information concerning the history of the Indians and their customs and habits, by sending his young heroes ashore at various points along the river from the sleep yacht which they had secured for their cruise. There is nothing dry or prosy in the author's presentation of facts, and these are pleasantly varied with incidents of a lively and amusing character. The localities visited are accurately described, and the tale is bright and breezy from beginning to end. [Boston: Lee & Shepard. Price, \$1.00.]

Mme. Edmond Adam (Juliette Lamber) has put into entertaining form "The Romance of My Childhood and Youth." In the preface Mrs. Adam writes of the public's interest today in the author's personality, while formerly the author's productions alone attracted the attention of the reading public. The writer was judged by her works, but today the cause of the book's creation is sought, and the details of the author's life are given. Madame Adam writes of the time when the French Revolution and Bonaparte had opened the French gates to foreign influx. Her father gave serious thought and labor to the best socialistic scheme, while her mother's ideas were brought into France from Germany, Italy, Austria and Russia. Many works exist on the "Reign of Terror," both in history and fiction, while Bonaparte's conquests have been told over and over again. But of the period following upon the close of the exhausting wars when the working people were in want and without labor, we have little literature. "The consciousness of the 'man of progress,'" writes Madame Adam, "were concentrated around the social conception of the 'suffering classes,' and the political conception involved in the crimes of the 'higher classes.' Love and indignation were the food with which they fed their youthful hearts. The Bible, the socialism and examples of sublimity of character taken from Greece and Rome, became the strange mixture that was the guiding spirit of our fathers' action and inspired our primal ideas. People of reason who possessed solid common sense, the Bourgeois, were naturally, to a much overrated degree, our enemies. We are, in all our primal impulses, the children of the men of 1848; our very reaction was born of their action." The author writes in a style somewhat similar to that of Pierre Loti's, which is the simple, descriptive and natural style peculiar to the class of authors who write in the first person from their own personal standpoint and individual observation. The world as they see it is so reproduced to their readers, and they do not attempt to use any one's glasses but their own. The author gives a vivid description of her childhood days representing the relations between her grandparents who have brought her up from babyhood and her parents who showed their incompetence to provide the necessities of life for their child. The quarrels which occur become tedious reading at times. The story of the youth of Madame Adam furnishes a very excellent picture of the socialistic tendencies at that period. The associations between father and child are interesting in the glimpses they give of the power of a young mind to grasp ideas that people of years often find difficult to master. Both views of peaceful life and the life of the city folk are given with attractiveness. The book is interesting to the student of history for the expressions given of the deep feeling among the socialistic reformers and the more sober government sympathizers, while the personal life history of the girl and woman will please the fiction reader. From a literary standpoint the book will rank well, as the mode of expression is well conducted throughout the story. The publishers have bound the book in a most attractive style. [New York: D. Appleton & Co. Price, \$1.40 net.]

Poultry.

A Woman's Poultry Experience.

When we were married, mother gave us a Plymouth Rock and a brood of chickens. We gave them a nice chance, fed them well, covered, probably, — Poultry Editor, and began to look for the first of the winter, but in vain — not an egg gladdened our vision until the price was down to two cents per dozen. We kept on in that way a few years and gave it up in disgust. Mother said we would buy our eggs, which would for a while. Then we began again with sixteen Brown Leghorns.

Well, our luck began to change, and at the end of the year we found our pets had given us just \$3.24 per hen. Now we called that business, and our courage began to rise. In the spring of 1901 I had already planned to have a family reunion the following Thanksgiving Day. I thought I would set a few of the large breed, as some think they are a better poultry. I had two Plymouth Rocks and one Light Brahma. They were quiet, and as they looked as though they would lay early, I just couldn't have them. I kept them until the first of December. My son turned to me, and about every morning there would be one or two eggs which they were too lazy to lay through the day, but would drop in the night. And the price of nice eggs thirty cents. We sold them to a village friend for \$1.00. That was two years ago. I have thought they are sitting yet, if they have a sunny corner to sit in. Last year we had eighteen Brown Leghorns. They brought a pig, and he weighed three hundred pounds in the fall. The hens paid for feed for him and for themselves, bought for our groceries and many little things for the house. Our April pullets began in the fall. Every week I had a heaping basket of eggs to send to the store, and it seemed to me when eggs were so high. Some say, "Oh, Brown Leghorns will fly over the fence." Let me handle them until they are large enough to undertake the journey and they will lay enough to pay the expenses of the trip. We do not have any trouble with them about flying. We have twenty-five pullets, and to say I am proud wouldn't half express it. We have a market for six and a rooster at any price we may set on them. Lovers of the large breeds may not like this letter, but this is our real experience.

MRS. F. L. NASON.

Key to Profits in Poultry.

The vigor of farm poultry must be kept up in order to have profitable stock, as weak mixed stock does not thrive or lay well. There is a mistake made in calling for extremely heavy weights in a breed. Select birds about the standard weight for the chosen breed, and get them thick fleshed and solid. Avoid a knock-kneed or crooked-backed bird, and a low comb is preferable in dressed birds. The active, alert hen is the layer. Select eggs from your best layers for hatching and use pure blood by all means, as they dress more uniformly and give the best all-round satisfaction.

A good poultry house has the following qualifications — warmth, dryness, brightness and cleanliness. Have a four-inch dead air space, lathed and plastered, not too much glass, low ceilings and all furniture movable. Permanent fixtures are often like harbors. A good house could be made cheap by 2x4 studding, lathed inside, oiled outside of studs with cheap lumber; tar paper on two or three thicknesses and side walls stunged; put paper on sheeting under slushes.

Give but little feed, and make them take lots of exercise. A very light mash of clover chaff, bran and oats ground fine, mixed stiff, is used in the morning, as it readily is assimilated by the fowl. Do not feed more than a quart to a dozen hens. Feed all grain in litter, and for non egg vegetables and meat in some form. Boil odds and ends of butchering rather than feed to dogs. Keep them well supplied with grit and clean water.

The secret of winter eggs is comfortable resting quarters, meat and exercise. Young hens lay better than old ones, and some strains excel in egg production. Hatch chicks as early as possible. The early ones catch the worm for either egg basket or market. Don't feed chicks till from twenty-four to thirty-six hours old. Then give them stale bread, soaked in sweet milk and squeezed. The best feed we have ever used is one-third corn meal, two-thirds bran, mixed stiff in milk, either skim or whole. Sour milk will not hurt after they are a week or ten days old. Don't let food stand. They will relish mashed potatoes, oatmeal, dry or cooked, for a change, and meat in some form. If they can't get green grass, give them other vegetable food.

Keep them busy and growing. The whole secret of successful poultry raising is in the first six weeks good vigorous growing. The market requires attention if best prices are to be obtained. Don't allow male birds with laying hens, as few people relish the idea of buying eggs with chickens in the shell. Have eggs clean and sorted for size and color. In every town and city a person who can guarantee eggs fresh and sweet can command a premium from customers. The cities and tourist trade would be more profitable if the proper quality was produced. It is astonishing to see the black, stoned stuff that is offered for sale in the cities. The English market would take \$200,000 worth of dressed poultry every year.

MYNOR A. GREY.

Ontario.

Standard Remedies for Lice.

A dust bath for fowls, with kerosene on feathers and whitewash and thorough cleanliness for house, are the most approved remedies for parasites. A Florida expert on station bulletin says apply to all parts of the house hot carbolic acid solution, one ounce to twenty parts water, or whitewash with one gallon of chloride of lime added to four gallons of wash, or kerosene emulsion. For the thin skin of the young, fowls only, use substances are permissible, like Persin, insect powder, lard or cottonseed oil.

In the case of old fowls, a little sulphur or kerosene may be added to grease or a flycatcher solution of creolin used. See about nests and small coops. I will add that the following are excellent deterrents in poultry: onion skins, tobacco trash, wormwood, tansy, elder or cedar sprigs.

IDA E. TILSON.

West Salem, Wis.

Horticultural.

Home Storage of Fruit.

There is such a certain and, usually, such a great rise in the price of apples between picking time and midwinter, that there is always money in storage, providing one can be successful with it. Many farmers and fruit growers have found that, with suitable houses, they can store apples at home almost as well as in city storage houses. At all events, they can make money by holding themselves independent of the apple buyers through the critical fall season.

One of the best farm storage houses that I know of appears in the illustration on page 5 and belongs to J. M. Fisk of Abbotford, Que. It is thirty by twenty feet, with eight-foot posts and a good stone basement. This house, shown in the accompanying engraving, was estimated to cost \$400, which is very low indeed, considering its substantial construction.

Plum Culture.

In one of our issues of December, 1902, I noticed a reply in part to my article on grass culture by Mr. A. A. Halladay, Maple-leaf Fruit Farm, Belows Falls, Vt., which to some extent discredits the necessity of intense cultivation.

He says that he has an orchard of from six hundred to seven hundred plum trees, and that he cleared the land for the orchard himself about seven years ago, taking off rock apples that were fully one hundred years old — in other words, a primeval forest. In fact, I suppose that his land has been a forest from time immemorial, and, according to his statements, a forest containing a large growth of trees. In that respect his land was decidedly the reverse of mine, for my field had been cultivated formerly in the old-fashioned way, until it had become so dormant and dead that it would produce nominally nothing. That is the difference between our two fields. We have always considered the primeval forest land to be all right for orchard work without much of any cultivation, but to deal with the general farm lands of New England is decidedly a different affair.

I believe his statement to be true that he has had an average growth of more than five feet, and in some cases eight and nine feet, and in one case he says he has found a growth of thirteen feet in a year. I can easily believe such a statement to be true for the simple reason that if my statement had been as large as that it would have been true. It is a fact that every statement I have ever made, whether as to grass or plums, has been under rather than over the mark.

The growth of my 1400 plum trees, which were intensely cultivated and grew three hundred feet or more to each tree this year, was produced almost entirely by intense cultivation. I know that to be a fact, because some of the stock I set out four years ago was set out where it was not cultivated, but in the same field, to be held for resting in the event of some of the trees not taking root. These trees, without cultivation, in four years grew less than two feet, while the cultivated trees grew as above stated, and at the same time the trees which were not cultivated produced no fruit at all.

I am very glad indeed that my worthy friend, Mr. A. A. Halladay, has brought this matter to the front, but his condition of soil is not the condition of soil which I am advising to cultivate. He will find but very few acres in New England of the same nature as the field he describes.

Apples in Over Supply.

The export apple markets are still in a very unsatisfactory condition, judging by the returns received by Boston shippers. One of these states that his net receipts were hardly seventy cents per barrel this past week, and in regard to some shipments on the way, he is not even sure of that amount. Apples loaded during the recent cold spell and kept in the hold of the vessels would not be sure to freeze, the cold air settling through the hatchways into the hold; also the vessels sailing recently have had rough weather and the apples have been shaken up and arrived in poor condition.

One load that this exporter sent to Wales during the December glut in the English markets met a favorable reception and netted him over \$2 per barrel. The later shipments have done poorly. He believed that the stock on hand the last of December, after more than a million barrels had been shipped abroad and many used in the home markets, were still greater than the entire crop of the previous year. There are 100,000 barrels, he said, in cold storage in Boston, and a proportionate amount in other cities. The market is very limited and sales hard to make. He hoped the situation would improve, but was so uncertain that he was not buying any more apples, either for shipment or local market. One load just received had become frozen and sold for 87 cents a barrel. The cold spell would not do much to improve the condition because of the large stock in the cities and the well-known effect of cold weather in reducing the sales of apples at the fruit stands and the like.

The total apple shipments to European ports during the week ending 17, 1903, were 63,896 barrels, including 28,624 barrels from Boston, 7086 barrels from New York, 27,830 barrels from Portland, 20 barrels from Halifax and 166 barrels from St. John. The total shipments included 54,430 barrels to Liverpool, 2657 barrels to London, 2369 barrels to Glasgow and 1540 barrels to various ports. The shipments for the same week last year were 40,588 barrels. The total shipments since the opening of the season have been 1,877,183 barrels, against 613,976 barrels for the same time last year. The total shipments this season include 641,171 barrels from Boston, 500,987 barrels from New York, 181,879 barrels from Portland, 476,756 barrels from Montreal, 30,476 barrels from Halifax and 25,914 barrels from St. John.

A cable to Maynard & Child on the Liverpool apple market reads: "Steamer Californian and remainder of the season; fifteen thousand barrels sold, mostly Canadian apples. Demand active for best quality of Canadian, but market weaker for Maine apples. Baldwin in general \$1.40 to \$3.50."

Hothouse Products.

Lettuce has been rather tough and poor of late, according to a leading Boston commission man, who says that even the best hothouse growers have not kept up their usual standard. He thinks the trouble is the high price and scarcity of coal, which has caused growers to scrimp and raise the crop at a temperature below that required for development of best quality and quick, tender growth. The recent cold snap also seems to have worked out the houses somewhat and injured the crop. Lettuce has been selling rather slowly, except for best

quality. The poor condition of the hothouse product of course increases the competition of Southern lettuce, which is usually tough and much inferior.

Hothouse tomatoes are scarce, but nearby growers promise a supply soon. Cucumbers are a little more plenty, but prices hold about the same. Hothouse grapes from England are a high-priced specialty, selling at \$2 per pound, retail.

Some native hothouse asparagus is on hand, mostly from Anson Wheeler of Concord. It retails at 30 cents per small bunch, and probably nets the grower about 40 cents. As the crop requires much less heat than some others, it should prove fairly profitable.

New York market is supplied with hothouse asparagus having larger stalks, and the price rules higher. "I suppose the costliest of all vegetables sold here at this time of the year, or at any time, for that matter," said a New York dealer in fine fruits and vegetables, "would be the hothouse asparagus that has just come in. It is produced by a grower in Illinois. It retails now at \$10 a dozen bunches, or \$14 a bunch. Each bunch is likely to contain seven or eight stalks, and of these some are sure to be pretty slender; so that you don't get very much asparagus for a dollar."

"Take the stalks big and little, as they run, and they cost you about 15 cents apiece. The prices for this asparagus hold up pretty well till say along in March, when they get down to about \$7.50 a dozen."

"There is more of such asparagus sold than formerly, but altogether there is not a very great quantity, though there are more people in New York now than ever before well able to buy whatever luxuries they want, and they buy costly fruits and vegetables more freely than they ever did."

"Hothouse strawberries are the most costly fruit," continued the fruit dealer. "and they are at their highest price in the middle of January."

"They come to market in what are called cups, which are really little bowls. It takes four cups to make a quart, and their price today is \$3 a cup, or \$12 a quart. There came to New York recently from the New Jersey hothouses in which they are grown only nine cups altogether, of which we received three, and these had already been sold. Of necessity, the Florida berries are picked before they are absolutely ripe; these hothouse berries, raised near at hand, are not picked till they are perfectly ripe. They are like so many freshly cut, perfect flowers."

Handling Cranberries.

At the recent meeting of the Wisconsin cranberry growers, E. K. Tuttle of Mather, Wis., advised growers to mark their berries with an individual brand and thereby establish a reputation on the merits of the fruit. He mentioned instances and showed the advantages of this method. H. H. Gehhardt of Black River Falls spoke on the subject of "Sound Berries," and gave it as his opinion that the grower should be liberal in this matter, and told his reasons why. In his opinion the package should be allowed to contain from two to six per cent of damaged or unsound fruit and still be in the sound class. A resolution was passed by the association, which asks the State legislature to make an appropriation of \$5000 annually for the purpose of experimenting with the cranberry for its development and benefit, the work to be done by the State university. While some experiments are now being carried on at the university, the object of this appropriation was to have an experimental station established either at Cranmore or some other convenient place where the work could be done with all the surrounding conditions that contribute to the growth and development of the berry.

Suggestions to Institute Managers.

Prepare programme at least thirty days before date of Institute. Arrangements should be made with persons in your locality who are to participate in Institute at least eight weeks previous to meeting.

Have a question box, and place it in charge of some competent person who will carefully conduct the same. Exclude from Institutes all sectarian and partisan topics.

Print on programme the name of chairman and members of committees. Thoroughly advertise the Institute by distributing programmes, invitation by postal cards, posters, and make use of your local newspapers.

Select a competent secretary to take notes and report proceedings of meeting to local papers. Invite representatives of newspapers to a place at recording secretary's table, and solicit their aid and assistance in reporting proceedings of meeting.

For a two-days Institute provide for five sessions, each session devoted to a certain topic, and have no local speaker crowded off programme for want of time, unless unavoidable.

Local Institutes where a suitable hall or church can be procured and the greatest number accommodated, as these meetings are for the benefit of farmers and their families.

Extend a personal invitation to your county superintendent of public schools to be present and take part, especially at the educational session, without which no Institute is complete. Invite all farm organizations, school teachers and children, especially the ladies, to attend and take part in the exercises.

The county chairman should, as soon as arrangements are completed for holding Institute, enclose to all lecturers expected to be present a copy of programme, with letter designating what railroad station to stop at and the name of the hotel secured for their accommodation. In case Institute

PURE-BRED MERINOS.
Flock of the Maine Experiment Station.

's held at a distance from railroad, speakers must be met by conveyance and taken to Institute.

Remember the Institute is for the whole county, and not merely for the town or locality where held. Begin advertising and do not fail to let the public know of your meeting.

Past experience has shown that the two-days Institute is much more economical and efficient than the one-day meeting. In the one-day meeting the time is usually given to the visiting lecturers to the exclusion of local men, on the ground that the people wish to hear the strangers, and as there is not time to hear all, the visitors are given the preference. This is a serious mistake. The main object of the Institute is the development of the local people, and whatever interferes with this ought to be corrected. A two-day Institute gives ample time for all to be heard, and provides also for the deliberate and full discussion of matters of interest that may arise. The morning session of the first day is almost always a failure, and ought to be dropped, and the Institute begin at 1 P. M. and continue for five sessions. This gives time for the visiting lecturers to reach the ground, and begin the work with the advantage of a full house.

A. L. MARTIN.

Director of Institutes, Harrisburg, Pa.

An absolute vacuum may always remain unbroken, but a close approach to it has been reached by Prof. James Dewar in his determined use of no air-pump. A glass receiver, with a receptacle at the bottom, is filled with air, which is then frozen and falls into the lower tube. The neck of the latter is then sealed in the blow-pipe flame, when the portion containing the air is broken off.

The shipments of wool from Boston to date from Dec. 31, 1902, are 13,377,336 pounds, against 12,385,722 pounds at the same date last year. The receipts to date are 6,883,157 pounds, against 7,499,456 for the same period last year. There has been a little more activity. Prices are a little higher, and for pulled wools are advancing. More business in foreign wools to arrive is reported. Considerable Australian wool in this way at stiff prices. A good movement of carpet stock is indicated.

Southern Nebraska reports that they look for the heaviest run of hogs about March 15. The crop is generally healthy. Iowa reports indicate that the bulk of the crop of oats were damaged in the fields, and the crop from that State was very largely reduced. They look for fifty per cent. less to go to market than usual. Buns generally empty also, and farmers commenced to feed new crop very early.

For the past five calendar years the average annual increase in the number of cigars smoked in this country has been \$75,000,000. For the year ending June 30, 1902, 6,965,749,968 cigars were consumed in the United States, 19,000,000 for every day of the year. The cigar bill of the American people last year was \$346,000,000, besides which there were consumed 2,654,176,136 cigarettes and 35,719,475 pounds of tobacco and snuff. The Government collected on this vast tobacco traffic in taxes and duties \$70,000,000. While the population of the country increased 25 per cent. between 1880 and 1900, the consumption of cigars alone increased 50 per cent. America, which has held the reputation of being the most temperate in the matter of alcohol, is likely to become the most immoderate in the matter of nicotine.

The United States Cattle Bureau has seven sets of men disinfecting the barns in New England where infected cattle were kept. In some cases a gang is occupied several days in disinfecting a single barn, it being necessary to do the work very thoroughly in cases of old structures. In some such instances there is a double floor and a great accumulation of filth between the two floors. Both layers of plank must be taken up and scraped and cleaned very thoroughly or perhaps burned. Dr. Salmon states that an agent will soon visit the farms and pay for the lumber destroyed in this way. The more modern barns are cleaned and disinfected very quickly. It is not only necessary to scrape the floors, walls and feeding boxes, and to rake off surface hay, but not more than twenty-five to fifty pounds of hay being destroyed in this way, and to use more or less of the disinfecting fluids provided by the department. In cases where a great amount of hay is destroyed, the Government agent will pay for it. The last herd of diseased cattle to be discovered was that of W. Pope of Ridgehill Farm, Wellesley. This well-known herd of over one hundred cattle had to be slaughtered. There is some fear that other cases may be discovered, since many cattle were constantly being bought or sold by Mr. Pope. But so far no other cases have been reported, and so far as known to the department, all cases have been killed, or more disease exposed to it have been killed.

Coal quotations have not changed in Boston market, anthracite being still quoted at \$12 for domestic sizes, with bituminous at \$10. The market is now better supplied with coal, and all danger of a famine is averted, unless a long, cold snap should be experienced. The outside operators are asking \$10.50 f. o. b. New York, and most of the coal coming to New England has to be brought through here. Freight is substantially unchanged, \$2 being a nominal rate, with sometimes higher prices being paid, depending upon the size of the vessel and the necessity for coal. The situation all over the country is still unsatisfactory, yet every week that passes with a minimum of suffering brings nearer the desired relief.

The twenty-eighth annual meeting of the Ayrshire Breeders Association will be held in the parlor of the Fifth Avenue Hotel, New York, Jan. 29.

Old Conger of Indiana is reported to have lately sold one Barred Plymouth Rock for \$150, probably the highest price ever paid for a Barred Rock in the United States. But W. R. Fisher sold a white Plymouth Rock cock for \$200, and six hens with him at \$20 each, making \$500 for the pen of seven birds.

The Union Agricultural Society of Somers, Enfield, Ellington and East Windsor, Ct., held a meeting Jan. 13, and elected the following officers: President, Alton C. Kibbe of Ellington; Vice-President, Charles S. Fuller of Somers; Secretary, Milo Hamilton of Ellington; Assistant Secretary, Harry J. Bridge of Hazard; Treasurer, Charles A. Thompson of Melrose; Marshal, Charles A. Price of Ellington.

The directors of the Concord (N. H.) State Fair Association have voted to hold their fourth exhibition in Concord Sept. 1, 2, 3, 4. Nashua and Laconia will come the week after, both opening on Labor Day, Monday, Sept. 7.

The annual meeting of the Connecticut Creamery Association was held in Hartford last week.

The agricultural society of Steuben County, N. Y., has a surplus of \$108. J. Lyon Robie of Bath was chosen general superintendent.

At the meeting of the directors of the Ash-tahula County (O.) Agricultural Society they were put in cheerful mood by the announcement that the society was not only out of debt, but had to its credit nearly \$500.

The Vermont State Agricultural Society has elected President, George Alken, Woodstock; Vice-Presidents, Dr. W. Seward Webb of Shelburne, C. W. Gates of Franklin, Dr. F. R. Stiles of St. Johnsbury and George W. Pierce of Brattleboro; Secretary, C. M. Winslow of Brandon; Treasurer, J. W. Parker of Quebec; Financial Committee, F. A. Field of Rutland, C. W. Brownell of Burlington, C. J. Bell of Walden. It was not decided when and where to hold the next fair. Last year's fair lost \$500 for the society.

Fifty cattle, belonging to the J. C. Thornton estate at Fairview, Pa., were killed Jan. 6. The cattle composed a dairy herd belonging to the late J. C. Thornton, and are said to be thoroughbreds and all registered. They were condemned by the State veterinary surgeon. The State pays \$50 for all registered cattle and for the common kind about \$25 each.

James Whyte, secretary of the Lenox (Mass.) Poultry Show, is receiving daily large numbers of entries for the annual show, Jan. 27. Entries will close Jan. 22. The show will be held in the new Town Hall, and with the trolley connections it will be very convenient for fanciers to attend. A large number of birds will be shown than ever before.

Forty thousand birds are reported to have been killed recently on the North Carolina coast for military purposes. They were mostly sand-pipers.

A. Russell was re-elected president and N. T. Stockwell vice-president of the Massachusetts Poultry Association. The following board of directors was chosen: A. W. Annis of Rockville, J. M. Copley of Andover, E. L. Pultz of Lebanon, H. W. Carter of Plainville, H. H. Ellsworth of Windsor, H. A. Slater of Wapping and F. H. Stettinmiller of South Carolina. About 550 bushels are reckoned to a car, so that approximately 6000 bushels are in the shipment.

One hundred and five Maine towns have taken advantage of the act passed by the last Legislature, which provided for the improvement of certain highways designated thereby as State roads.

The Massachusetts State Board of Agriculture, Jan. 14, elected Hon. William R. Sessions of Springfield first vice-president, Augustus Pratt of North Middlebury second vice-president, J. L. Ellsworth of Worcester secretary on the first ballot, Dr. H. T. Fernald of Amherst State nursery inspector, and P. M. Harwood of Barre general agent of the State Dairy Bureau. Governor Bates is ex-officio president of the board. The specialists elected were Dr. C. A. Goessmann of Amherst, entomologist; Prof. F. A. Waugh of Amherst, botanist and pomologist; Prof. James B. Paige of Amherst, veterinarian; William Wheeler of Concord, engineer, and E. H. Forbush of Wareham, ornithologist. Vice-president Sessions appointed the usual standing committees. The special committee to investigate the practicability of the manufacture of vaccine lymph at the Massachusetts Agricultural College reported favorably and presented figures as to the probable cost. The board accepted the report and voted to transmit it to the Legislature with a recommendation for an appropriation. It was voted to hold the next public winter meeting at Athol Dec. 1, 2 and 3. Also a summer meeting at Amherst at the agricultural college.

The Government agent who was convicted and fined for unnecessary cruelty in his method of killing mice was also convicted of the same crime at Concord, which has appealed to the United States Court, which has postponed decision to Jan. 26. The case seems to hinge on whether or not his actions were unnecessarily cruel, and the judge wishes to learn more of the facts involved.

The value of Maine live stock for the past two years shows an increase of \$737,863, money at interest \$1,673,438, stock in trade \$637,697, total personal stock \$3,558,558, shipping \$114,878, logs and lumber \$314,871, wood and bark \$79,456, musical instruments \$19,021, carriages \$4026, furniture \$143,040, real estate of railroads \$222,815, of street railroads \$61,000, property exempted from taxation a decrease of \$137,481. Bank stock shows a decrease of \$427,774, corporation stocks not classified, a decrease of \$28,475. The amount of taxes assessed on corporations has been increased during the past two years by \$345,463.65. A Massachusetts legislative bill to regulate the sale of concentrated commercial feed stuffs, says that every parcel of such stuffs shall bear a plainly printed statement of its name or trademark, the name and address of the manufacturer, importer or dealer, the net weight and the minimum percentage of protein and of other constituents. Violation of the above provisions is punishable by a fine of \$50 for the first offence, and \$100 for every subsequent offence. Authority is given to the director of the Hatch Experiment Station to enter premises and to make prosecutions. Adulteration of feed stuffs is punishable by fine of from \$25 to \$100. The bill, if passed, would make an annual appropriation of \$3000 for its enforcement.

A two-days session was held by the Connecticut State Grange at Hartford, Jan. 13-14. Attendance at the meeting varied from 150 to 500. The report of secretary H. E. Loomis showed the Granges to be generally in a prosperous condition. There are 116 Granges, one has been reorganized and one has given up its charter. Membership about 8000. The report of the executive committee by O. S. Wood, chairman, recommended the formation of new Pomona Granges to allow a more compact organization. The report of the treasurer showed a balance on hand, Jan. 16, 1902, of \$2894.75; receipts for the year, \$4666.89; expenses, \$4217.55, and cash on hand, \$3334.09. The invested funds of the Grange amount to \$2892.00. The committee on agriculture, J. H. Putnam, chairman, referred to the formation of trusts as a menace to the farmers. It advocated special farming and the need of studying the demands of the market.

TURKEYS



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No book in existence gives an adequate account of the turkey — its development from the wild state to the variety breeds, and complete directions for breeding, feeding, rearing and marketing these beautiful and profitable birds. The present book is an effort to fill this gap. It is based upon the experience of the most successful experts in turkey growing, both as breeders of fancy stock and as raisers of turkeys for market. The price-weighing papers out of many 500 cases submitted by the most successful turkey growers in America are embodied, and there is also given one essay on turkey culture from different parts of the country, including Canada and New Brunswick, that the reader may see what ways have proven successful in each locality.

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Black Cochins Bantams, Golden

Sabright Bantams and Yellow Fantail

Pigeons.

The Markets.

BOSTON LIVE STOCK MARKETS.

ARRIVALS OF LIVE STOCK AT WATERTOWN

For the week ending Jan. 28, 1903.

	Shotes	Fat
Cattle	21	21
Sheep	115	115
Hogs	330	330
Yards	1000	1000

This week's arrivals, 1250

Last week's arrivals, 1100

This year's arrivals, 3115

Last year's arrivals, 2753

This year's arrivals, 3115

Last year's arrivals, 2753

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Grouse, Iowa, dark, p. pair	1.00
Grouse, Iowa, light, p. pair	1.00
Grouse, Texas, p. pair	1.00
Wild ducks, p. pair	1.00
Canvases	2.00
Redheads	1.00
Malards	1.00
Ruddies	1.00
Small	1.00
Rabbies, p. pair	1.00
Jack Rabbits, p. pair	1.00
Yenison, saddles, p. lb.	1.00
Yenison, whole deer, p. lb.	1.00

NOTE—Assorted sizes quoted below include 30, 50, 60 lb. tubs only.

Creamery extra

Northern N. Y., assorted sizes

Northern N. Y., large tubs

Western, large ash tubs

Western, small spruce tubs

Creamery, northern firsts

Creamery, second

Creamery, eastern

Dairy, Vt., extra

Dairy, N. Y., extra

Dairy, N. Y., and Vt. firsts

Renovated

Extra northern creamery

Extra dairy

Common to good

Trunk butter in j or p prints

Extra northern creamery

Extra northern dairy

Common to good

Cheese

Vt. twins, extra p. lb.

firsts p. lb.

seconds p. lb.

Sage cheese, p. lb.

New York twins new extra

firsts

seconds

Eggs

Nearby and Cape fancy, p. doz.

Eastern choice fresh

Eastern fair to good

Michigan fancy candied

Vt. and N. H. choice fresh

Western fair to good

Western selected, fresh

Refrigerator—April

Summer

Potatoes

Hebron, p. bu.

New York, round

Western

Aroostook Green Mountain

Sweet potatoes, yellow—Southern

Jersey double head

Vineyard, fancy

Green Vegetables

Artichokes, p. bu.

Beets, p. bu.

Cabbage, native, p. bbl.

Parsnips, p. doz.

Lettuce, p. doz.

Celery, Boston market

Raisins, p. bbl.

Spinach, p. bbl.

Tomatoes, p. bbl.

Peas, p. crate

Cucumbers, nothouse, each

Onions, native, p. bbl.

York State, p. bbl.

Peppers, p. bu.

Egg plant, p. case

Farsley, p. bu.

Sprouts, p. ct.

Rhubarb, p. doz.

Radishes, p. doz.

Squash, marrow, p. doz.

String beans, p. doz.

Wax beans, p. doz.

Turnips, flat, p. box

Turnips, yellow, p. box

Mushrooms, native, p. lb.

Fruit

Apples, common, green, p. bbl.

Hawthorn, p. bbl.

Pound sweets

Greenings

King, p. bbl.

Syrup

Mixed

Florida oranges, p. box

Common, p. box

Florida smooth Cayenne, p. box

Strawberries

Cape, choice dark

Cape, common to good

Cape, p. box

Hides and Pelts

Steers and cows, all weights

Hides, light green, each

dry flint

Hides, salted

buff, in west

salted p. lb.

Calfskins, 5 to 12 lbs. each

over weights, each

Deacon and dairy skins

Lambskins, each

Country Fells, each

Dried Apples

Evaporated, choice

Evaporated, prime

Sun-dried, as to quality

Grass Seeds

Timothy, p. bu.

prime

Clover, p. bu.

Red Top

fancy reseeded, p. lb.

Beans

Pea screened

Pea seconds

Pea foreign

Mediums, choice hand-picked

Mediums, screened

Mediums, foreign

Yellow eyes, extra

Yellow eyes, second

Red Kidney

Lima beans dried, p. lb.

Hay and Straw

Hay, No. 1, p. ton

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The Horse.

Stallion Management.

The preparation of the stallion for service should be the same as the preparation for work; and for effectiveness, working condition, not "show condition," should be aimed at. "The surest stock getter we ever knew," said a prominent veterinarian, "was an aged black horse which was often taken from the plow or the cart to serve the mares brought to him." The winter food of a young entire animal should consist of crushed oats, chaff and a little bran, with carrots and hay. He should be kept in a roomy box or yard, and be exercised in hand. During the winter train him to surcingle, crupper and bit, and lead him on the roads to get used to the traffic and unfamiliar sights and noises. Before starting to cover, for a month or six weeks begin to feed heavier, and give a few old crushed beans and a few white peas occasionally mixed with oats and chaff, and a few carrots daily. During this time the amount of walking exercise should be materially increased, and the animal should have plenty of good honest grooming, which, if harder work, is better for the animal than a shiny coat produced by the use of drugs. The horse should be walked at least six hours a day, and better ten, in order to get him into condition, in the true acceptance of the term, and fit to travel when the season opens. With further reference to the use of drugs, Galvayne, in his account of the management of stallions kept entirely for service purposes, says: "Physio may be an absolute necessity, and the cause of the necessity unavoidable, but I think it is generally otherwise, want of care in dieting and want of exercise being the primary cause. If physio is necessary, administer it, but I do not believe in the general use of condiments, stimulants and tonics, except, of course, in cases of temporary indisposition. Always keep rock salt in the manger, and do not be afraid of using too many carrots." The same authority speaks approvingly of walking stallions, that do not travel a district, one hundred miles per week. It is a mistake to take too many engagements during the horse's first season. Nip all tricks in the bud, and carefully train the animal to habits of obedience.

The fat horse looks larger and better and will sell for more money even to a buyer who knows well enough that a horse in such flesh is not fit for business. Feeding for sale should begin two months in advance, and should be accompanied with thorough use of the brush and curry-comb to improve gloss and general appearance of the coat. Rough, coarse coats should be clipped.

The receipts of horses at Chicago in 1902 were 102,100 head, against 109,353 head in 1901, with the high record of 118,754 in 1898. The receipts for December were only 5343, January, February, April and May each over ten thousand, while March 15,516 head were received.

The demand for draft horses seems to be increasing faster than the supply. Carloads sell at \$200 to \$250 per head as fast as they can be unloaded. Hundreds of small farmers are making some of their easiest profits from a few Percheron mares and the sale of young drafters.

In western Washington the roads are almost knee deep with dust during dry spells. Straw is very cheap there, and has been used with success to cover the roads and hold down the dust.

At Brighton Beach, England, the racing trotter Lord Derby has made a new record for a four-wheel race, finishing his mile in 2.05. Among the trotters that have taken records to wagon faster than they have to sulky are: Lord Derby, with a wagon record of 2.05, as against 2.03 to sulky; York Boy 2.08 to wagon and 2.04 to sulky; Ida Highwood 2.09 to wagon and 2.13 to sulky; Louise Jefferson 2.10 to wagon and 2.17 to sulky; Alice Barnes 2.10 to wagon and 2.11 to sulky.

Investigations at various experiment stations indicate that it requires about three pounds of potatoes to equal one pound of hay, and for horses standing idle in the barn, potatoes may be used to some extent where refuse ones can be had very cheap.

A farmer in Schoharie County, N. Y., is said to have a pair of horses that are thirty-seven and thirty-three years old, respectively, and were raised on the farm where they still live. They are doing farm work and eating three meals a day.

Ways of the Mexicans.

School children study their lessons aloud. The best grades of coffee are sold at tobacco stores.

The Mexican meal consists of more kinds of meat than vegetables.

Railways, street cars and cabs all provide three classes of conveyances.

In the cities real estate is sold by the square meter instead of the front foot.

Fruit and vegetables are not sold by measure, but by the dozen or by weight.

Theatre managers are fined if they do not produce the cast and features advertised.

Mexican tailors take the clothes of their customers to the patron's home to try them on.

Mexican men of the lower classes wear the biggest hats in the world, the women none at all.

Sunday is the great amusement day. All big entertainments are reserved for this general holiday.

A servant is called or a coach stopped by hissing or clapping the hands instead of shouting or whistling.

Pork and beef markets are, as a rule, separate institutions, as a license is exacted for the sale of each kind of meat.

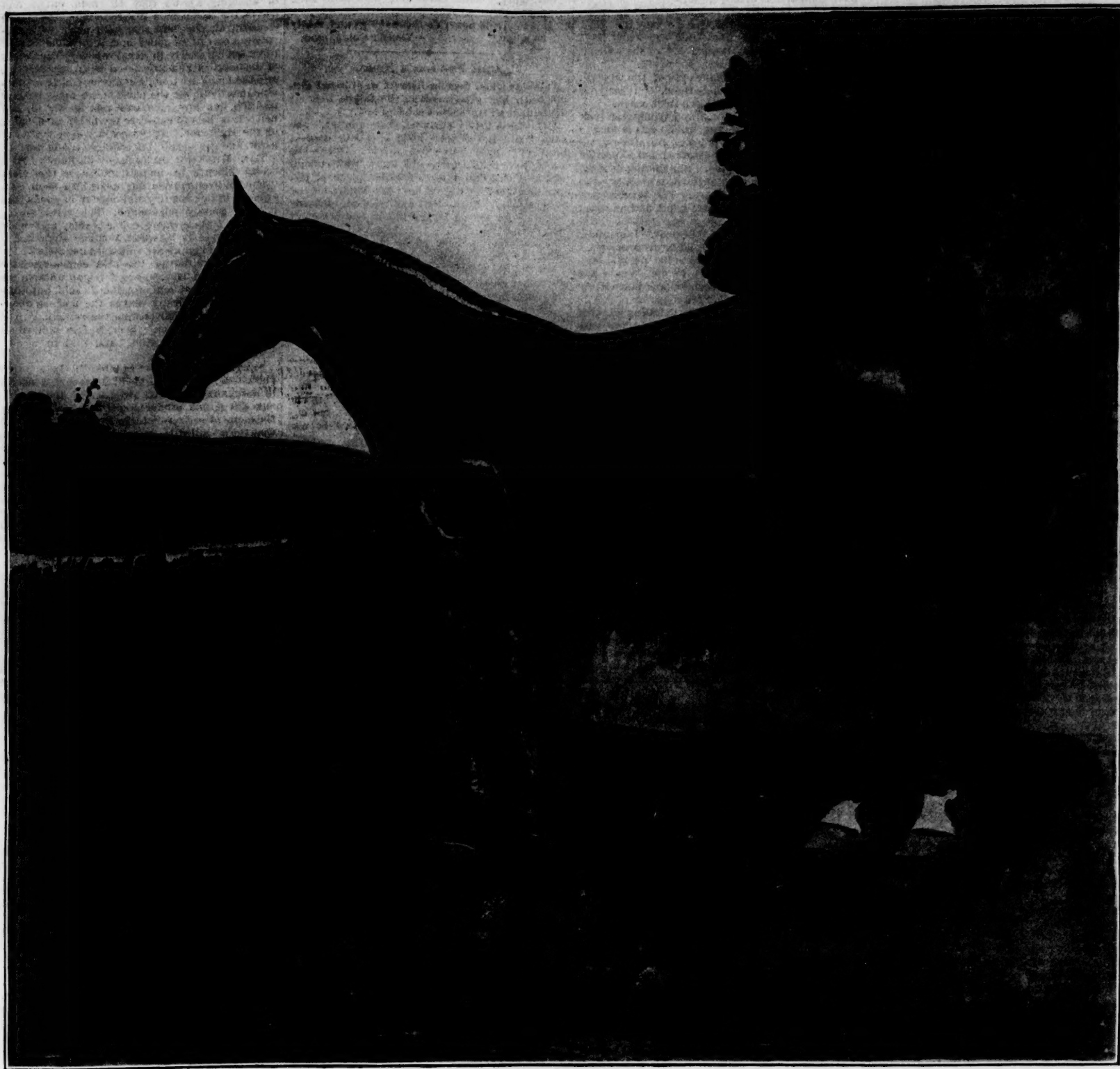
Gentlemen not only tip their hats to one another, but they are as careful to remove them in your office as in their own.

The streets in most of the smaller towns are lowest in the middle, sloping from the sidewalks to the drain on the surface.

The Mexicans are great smokers, the cigarette being generally preferred, but chewing tobacco is practically unknown among the native population.

Bread is universally baked in small

Horse Owners! Use
CAUSTIC
Balsam
The Caustic Balsam is used over the place of all other remedies for the cure of the following diseases: **WOUNDS, BRUISES, BURNS, SCALDS, SORES, FROSTBITE, CHANCES, ETC.** It is a sure cure for all these diseases, and is sold by all druggists. **THE LAWRENCE WILLIAMS CO., CHICAGO, ILL.**



ELECTIONEER, FOAMED MAY 2, 1868. DIED DEC. 3, 1890.

French loaves that retail for two cents each, and an entire piece is served to each person at a meal without cutting.

The delivery of all light retail goods, such as groceries, queensware, etc., is effected by cardholders, who carry the packages in baskets or boxes on their heads.

New Year's Day is an important anniversary. Presents are exchanged quite as generally as upon Christmas, and friends send cards bearing best wishes for the new year.

Mexican gentlemen recognize a lady acquaintance first when they meet upon the street, and the lady, as a rule, returns only the most formal bow without change of facial expression.

All checks, bills and documents of record must bear revenue stamps, and the principal books of commercial houses are liable to inspection from government tax authorities at any time.

As alfalfa and grass grow all the year round in most parts of Mexico, dry hay is practically unknown. City animals are supplied with green fodder delivered in small bundles every day. It is delivered from house to house loaded on burros.

The license of street peddlars and small booths are collected daily. The collector for the city calls every morning and determines the tax from the amount of stock on hand. Taxes are collected as low as a few cents a day. Coupon tickets are given as receipts.—Modern Mexico.

What It Means to be "Educated."

A contemporary, having asked four hundred prominent educators of this country to formulate a working definition of education, has begun to publish the varied answers that have come in as a result of this demand. The definitions already printed are of great interest, though no single one has as yet seemed adequately to cover the ground. President Hadley, from whom much might have been expected, sends the reader to Webster's Dictionary for what he calls the "narrow" view of education. But since this results in a view that is not really narrow, he might have done worse. "Education," says Webster, "comprehends all that series of instruction and discipline which is intended to enlighten the understanding, correct the temper and form the manners and habits of youth, and fit them for usefulness in their future stations." When one adds that this applies to the education of the secondary school in which one prepares for work in the university of life, one pieces the thing out helpfully.

It is, however, out of the West that the most vigorous and comprehensive answer to the query comes. The State superintendent of Michigan writes: "Education is the sum total of results produced in the life and character of a young man or woman by the combined forces of the home, the school, society, the church and the State. It is to be measured by his efficiency or power to do, first for himself, and secondly and most important, his power to be of service to mankind."

The last sentence seems to us to sum up the truth of the matter from the view point of the twentieth century. While Aristotle's thought about education, that it is (to the individual) an ornament in prosperity and a refuge in adversity, and again that it is the best viaticum of old age used to be enough, and more than enough for our grandfathers, we of today ask not, what does a man know, but what can he do? Education that is not translated into service counts to us for comparatively little. The time is past when we permit a man to live unto himself, and spend his whole life, if it so please him, in following what Milton calls the "right path of a virtuous and noble education, laborious, indeed, at the first ascent, but else so smooth, so green, so full of goodly prospect and melodious sounds on every side that the harp of Orpheus was not more charming." A case in point: There is just now in

Boston a young man, concerning whose intellectual equipment people entertain strongly opposed opinions. "How thorough," some ask, "is Professor Griggs' education? If he really knows so intimately as he appeared to know all those mighty men of whom he spoke so well last year, then he is a veritable wonder. Even to have assimilated Dante, as the course he is now giving would indicate that he has done, would be an achievement that should place him high among the scholars of the present day. "But," these continue, "I am inclined to think he is not really profound after all. Perhaps he has just 'gotten these things up.'"

Well, what if the latter be true, though we have no knowledge that it is? If Professor Griggs has the capacity so to "get things up," and so to present them after he has gotten them up, that Tremont Temple is crowded to the doors to hear his interpretation of the great Dante, has he not by this proved himself to have the kind of education that is distinctly worth having? Education that can inspire others with desire to drink deep of the Perian spring, and can help all who come in contact with it to live more worthily, is just the kind of education we need in these days.

We cannot all be lecturers or teachers, but we can have the open mind and the impressionable brain. And, having these, we may cultivate the art of expressing clearly and cogently what we ourselves think concerning any piece of literature or any phase of life. That man or woman is never really educated who lacks the power to put into words any conclusion that may have been reached while practicing "the almost lost art of thinking." This is not to say that one should be contentious or argumentative or didactic. Still less is it to thrust one's own ignorant opinion down the throats of all with whom one comes in contact. But not to have an opinion sometimes, and not to be able to express it when called upon so to do, is certainly to prove one's self uneducated, however many degrees one may have appended to one's name.

Education, as we today understand it, is nothing if not altruistic. This it is which differentiates our twentieth century brand from the "learning" of the Dark Ages.

Selecting Ewes for Breeding.

In taking up the breeder's ideal ewe and how to select the same, I should say that the most important point for the prospective buyer or breeder in the selection of ewes suitable for breeders is thoroughly to post himself on the type of the breed he expects to purchase. Have an understanding of the true type of the breed you are selecting, and have some idea of what you want to produce.

In the selection of breeding ewes from a strange flock, it has been my purpose always to try to get as much constitution as possible, provided they had the required amount of breed type. By that I mean the animal must be pleasing to the eye, and in the Shropshire well like a good, long, low-down sheep, with short leg of flat bone and set as near the outside of the body as possible.

In the ewe the neck must be of medium length and not too thick, chest well extended to the front, with good wide crops, and shoulders squarely placed. With these points well developed you must get a strong constitution, the ribs must be well sprung and the loin must be wide and thick, with the quarters full and round and as near down to the hock as possible. We must also see that we have a good dense fleece of medium wool, and free from all dark wool if possible to get it.

I might say that, if you have a good, strong-constituted ewe, do not discard her even if she lacks some of the minor points necessary in a show animal, such as having a little wool on the legs or having a little dark wool around the eyes.

Some of the most profitable animals I have ever raised for farmers' purposes have been those with some of the minor faults previously described. I claim that constitution is the foundation of all improvement in breeding, and I would strongly urge breeders to discard as soon as possible all animals lacking a robust constitution, no matter how many other points they may have in their favor, as you will never succeed without a vigorous constitution.—J. C. Duncan, to New York Shropshire Breeders.

Silage for Sheep.

We have fed ensilage to sheep, a good deal of it, this winter, more than usual, because we have been short on some other food, and none of our ewes have leaned up against the fence yet. We have a great many lambs, and they all seem to be doing well, are fat, and the ewes have a large flow of milk. They are not living on ensilage alone.

They are getting clover hay and some alfalfa, but their main course is ensilage, all they will eat up clean in three-quarters of an hour at each end of the day. Our grain is largely oats with a small mixture of wheat, and then their protein they get in a little clover and alfalfa.

GEORGE MCKERROW, Supt.

Corliss, Wis.

Prosperous New York Farming.

The weather conditions of western New York the past season were similar to those which prevailed over a large portion of the Northern States, with moisture at times sufficient to dampen the ardor of the most enthusiastic. While the loss was heavy in connection with some farm crops, with others the conditions seemed peculiarly favorable for a luxuriant growth and prolific yields.

The hay crop promised an abundant crop of superior quality. A large proportion, however, was nearly or quite ruined during its harvest. Winter wheat was secured, as a rule, in excellent condition, the Hessian fly, so destructive the year previous, having done no perceptible damage. The oat crop went far ahead of any previous yield in the recollection of the "oldest inhabitant"; sixty, eighty and even ninety bushels per

acre were the yields stored in many farmers' barns the past season. Barley also gave an unusually good crop of excellent quality.

The corn crop gave good results planted on naturally dry upland where gravelly loam predominated, but the greatest share of corn was planted on land where its feet were kept too wet for a favorable yield, again demonstrating the imperative need of a more thorough system of tile drainage on many farms. Potatoes were also seriously injured, in many instances entire fields being ruined, with occasional fields yielding fair returns, with comparatively little rot. While the aggregate outcome of the apple crop exceeded the expectations of nearly every one, its inferior quality made it more difficult to dispose of than any other crop, consequently, the evaporators and cider mills have been surfeited with this rejected fruit. Just at present no one wants to buy. Many are shipping to outside markets as the only alternative, seemingly, and with not very good results.

The large acreage of cabbage grown in this vicinity the past season still remains in the farmers' hands; present market price \$4.50 per ton. In review of the general outcome of the farmers' efforts the past year, and notwithstanding the various obstacles that have seemed to combine to thwart a successful termination of his plans, we are forced to believe that with an intelligent and thorough system inaugurated relative to needed tile drainage, timely and persistent tillage, by adopting the most modern methods for the subjugation of the insect enemies of fruits and plants, and by practicing a wise economy in the general farm management, the farmer still is more highly favored in the enjoyment of the good things of this life than many of those who are engaged in other avocation.

IRVING D. COOK.

Genesee County, N. Y.

QUALITY OF CITY MILK.

The price of milk in New York markets reached a higher figure in December than at any time during the past twenty years. As a result of the scarcity, there has been some apparent decrease in quality after the various middlemen and pedlars get through with it. There are very stringent,

clearly printed and much elaborated restrictions and regulations regarding the production, transportation and sale of milk in New York city. They are, for the most part, in convenient pamphlet form, have been widely circulated, and are probably well known by every handler of the article. But they are nevertheless daily disregarded, as any one who wishes such data may ascertain for himself in half a mile's personal inspection. For instance, milk is required to be kept at a temperature of less than 50° F. from the time it is cooled after leaving the cow until it is delivered to the consumer. But the single milk can in the rear of nearly every grocery at any time of year will toward the close of the day show a temperature of from 10° to 15° in excess of this. An inspector in discussing the matter with a representative of a New York daily, said:

"But what are you going to do about it? A thorough, conscientious supervision of New York's milk supply would necessitate a corps of some hundred or so men. The law on this subject is enforced about as well as it is on any other. As a matter of fact, the very same adulterations that so horrify the milk consumer are used in nearly all canned goods, and nobody says anything."

"But," it was urged in reply, "it is a matter of statistics that more than six thousand deaths occurred in 1900, for instance, among children under five years of age from diarrheal causes, and that old or adulterated milk is the commonest cause of such diseases."

"Well," was the reply, "when you see a mother give her year-old baby scurlet and green gundrops, bacon rinds off the floor, and tea that has been standing for hours in a tin pot, all this hue and cry over the impurity of the milk it gets loses a good bit of force."

In the best milk tested immediately after milking about 300 bacteria are found in every drop. Kept at a temperature of 40° there is no increase in these in twenty-four hours. At 32° milk can be kept wholesome almost indefinitely. At 45°, however, milk seventy-two hours old contained 150,000 bacteria to the drop, showing that, independent of temperature, age has much to do with the healthfulness of milk. A single germ in high temperature has been known to multiply to two billion in eighteen hours. The multiplication of these germs is doubly injurious in consuming the nutritive properties of the milk and adding to it such as are really poisonous. The commonest adulterations used in milk are formaldehyde, borax, boracic acid, benzoate of soda and salicylic acid. None of these are ever present in sufficient quantities to be in themselves harmful, as several gallons of the milk thus treated would have to be taken at the time to produce such a result.

Hogs and poultry will be more or less together, as hens are drawn to the hog house by the access they have to feed material. But, as a whole, they are a nuisance in the hog house, as they are in any other stable or barn building.—Prof. Thomas Shaw.

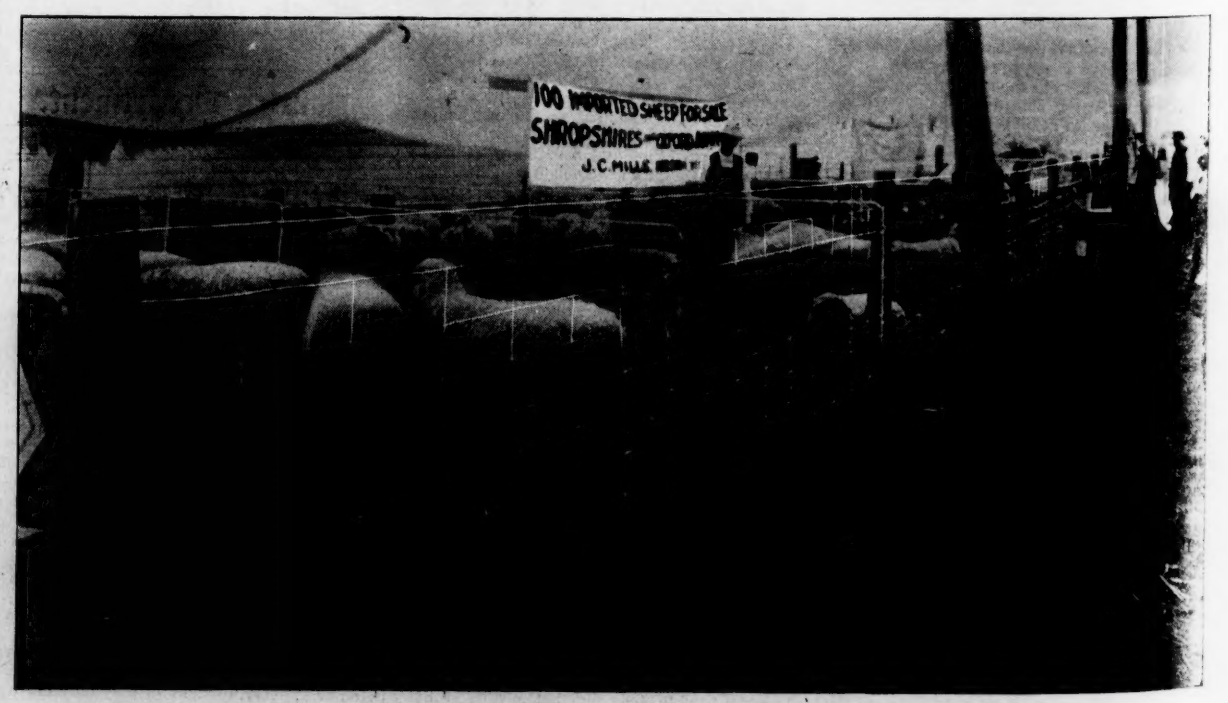
THE LAND OF MAKE-BELIEVE.

It is well to wander sometimes in the land of Make-Believe. Through its ever-smiling gardens, where the heart may cease to grieve, Where the beds are gay with roses and the paths are paved with gold, And our hopes, like soaring songsters, their mercurial wings unfold. Let us all be little children for awhile and make our way Through the sweet and sunny meadow land of Make-Believe today. There's a queen within an arbor, where she rules in high renown, With a lily for a sceptre and a rose wreath for a crown. And her laws are love and laughter, for they know not sorrow there; Never hate or pain, or money enter in her kingdom fair; So we sing the songs the children sing and play the games they play As we wander in the garden land of Make-Believe today. —St. James Gazette.

SIMPLEX CALF FEEDER.

The only practical Calf Feeder. The only sensible method of raising calves. No more "teaching the calf to drink." Promotes digestion. Prevents scours. Adds to the value of the calf, whether intended for the dairy or for veal. Price of Feeder, \$1.50, postpaid. Agents wanted. Booklet free. Mention this paper. ROSELEY & FRICHARD MFG. CO., Dept. 1, Clinton, Iowa.

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Scientific American.
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MUNN & CO., 361 Broadway, New York
Branch Office, 65 F St., Washington, D. C.



Showing how the sheep pens at the Minnesota State Fair were enclosed with Page 11-bar 42-inch Hog and Sheep Fence. Notice, it is stretched up so tight that the coil is all drawn out of the horizontal wires, but if they would let up on the strain, the wire would resume the spiral shape again.

Mr. John C. Mills of Preston, Minn., is a prominent breeder of thoroughbred stock. He uses this style of fencing to enclose his thoroughbred sheep with, and is a general user of Page Fences. Ask him about their utility.